



Final

**ENVIRONMENTAL ASSESSMENT
FOR THE
ESTABLISHMENT OF AN
AIR-TO-SURFACE HELICOPTER
GUNNERY TRAINING TARGET SET AT
WHITE SANDS MISSILE RANGE,
NEW MEXICO**



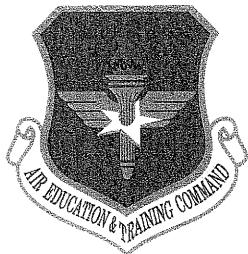
December 2007

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ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter	L_{dnmr}	onset rate-adjusted monthly day-night average A-weighted sound level
49 FW	49th Fighter Wing		
58 SOW	58th Special Operations Wing		
AETC	Air Education and Training Command	mg/m^3	milligrams per cubic meter
AFB	Air Force Base	MSL	mean sea level
AFI	Air Force Instruction	NAAQS	National Ambient Air Quality Standards
AFSOC	Air Force Special Operations Command	NASA	National Aeronautics and Space Administration
AGL	above ground level	NEPA	National Environmental Policy Act
APE	Area of Potential Effect	NHPA	National Historic Preservation Act
AQB	Air Quality Board	NM	nautical mile
AQCR	Air Quality Control Region	NMDG&F	New Mexico Department of Game and Fish
AR	Army Regulation	NO_2	nitrogen dioxide
ARC	Acoustic Research Complex	NRHP	National Register of Historic Places
BLM	Bureau of Land Management	O_3	ozone
BMP	best management practice	Pb	lead
CAA	Clean Air Act	$\text{PM}_{2.5, 10}$	respirable particulate matter less than or equal to 2.5 or 10 microns
CEQ	Council on Environmental Quality	ppm	parts per million
CFR	Code of Federal Regulations	ROI	Region of Influence
CO	carbon monoxide	SAAQS	State Ambient Air Quality Standards
dB	decibel	SEL	Sound Exposure Level
DOD	Department of Defense	SHPO	State Historic Preservation Office
EA	Environmental Assessment	SIP	State Implementation Plan
EIAP	Environmental Impact Analysis Process	SO_2	sulfur dioxide
EIS	Environmental Impact Statement	SOS	Special Operations Squadron
EO	Executive Order	TSP	total suspended particulate
ESA	Endangered Species Act	U.S.C.	United States Code
FAA	Federal Aviation Administration	USAF	U.S. Air Force
FNSI	Finding of No Significant Impact	USEPA	U.S. Environmental Protection Agency
FY	Fiscal Year	USFWS	U.S. Fish and Wildlife Service
GAF	German Air Force	UXO	unexploded ordnance
HLZ	Helicopter Landing Zone	VFR	Visual Flight Rules
IFR	instrument flight rules	WSMR	White Sands Missile Range
IWFMP	Integrated Wildland Fire Management Plan		
JDETS	Joint Directed Energy Test Site		

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FOR THE
ESTABLISHMENT OF AN AIR-TO-SURFACE
HELICOPTER GUNNERY TRAINING TARGET SET
AT
WHITE SANDS MISSILE RANGE, NEW MEXICO



Prepared for

U.S. Department of Army, White Sands Missile Range, New Mexico

and

U.S. Air Force, Air Education and Training Command, 58th Special Operations Wing

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December 2007

FINDING OF NO SIGNIFICANT IMPACT

**FOR AN ENVIRONMENTAL ASSESSMENT ADDRESSING THE
PROPOSED ESTABLISHMENT OF AN AIR-TO-SURFACE HELICOPTER
GUNNERY TRAINING TARGET SET AT
WHITE SANDS MISSILE RANGE, NEW MEXICO**

INTRODUCTION

White Sands Missile Range (WSMR) is managed by the U.S. Army and is operated to support Department of Defense (DOD) readiness programs that include a multi-service test facility supporting research, development, testing, and evaluation of missile and other defense systems. The installation is one of the largest military installations in the United States and encompasses 2.14 million contiguous acres in south-central New Mexico.

An Environmental Assessment (EA) has been prepared to address the potential impacts on environmental and socioeconomic resources associated with the proposed establishment of an air-to-surface helicopter gunnery training target set on WSMR. The EA evaluates the Proposed Action of constructing and operating this training facility at the Fairview area of WSMR, an alternative site to the west, and the No Action Alternative.

WSMR is a U.S. Army installation, and the Proposed Action would occur on U.S. Army land. However, the proposed air-to-surface target set would be an asset of the U.S. Air Force (USAF) to support proficiency training requirements for USAF helicopter crews. Consequently, the U.S. Army and the USAF are cooperating agencies in the preparation of this EA. The 58th Special Operations Wing at Kirtland Air Force Base (AFB), New Mexico is a unit of the USAF Air Education and Training Command (AETC) and is the proponent of this action. Kirtland AFB is located southeast of Albuquerque, New Mexico.

The EA will support the decision-making process for the proposed air-to-surface target set and has been prepared pursuant to the requirements of the National Environmental Policy Act (NEPA), as promulgated in 40 Code of Federal Regulations (CFR) Parts 1500–1508; U.S. Army Regulation (AR) 200-2, *Environmental Analysis of Army Actions*, March 2002 (now 32 CFR Part 651); and the USAF's *Environmental Impact Analysis Process* (EIAP) under 32 CFR Part 989 (formerly known as Air Force Instruction [AFI] 32-7061).

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to establish an air-to-surface helicopter gunnery training target set within 150 nautical miles of Kirtland AFB that is specifically designed to support helicopter training requirements. The target locations would be away from air traffic associated with the existing Red Rio and Oscura range assets on WSMR, and the target layouts would be specifically designed for training associated with helicopter operations.

The need for the Proposed Action is to provide the 58 SOW with a long-term supplement to the Red Rio and Oscura range assets to allow the unit to achieve the proficiency levels dictated by training requirements.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

Proposed Action – Fairview Site

The Proposed Action is the establishment of an air-to-surface helicopter gunnery training target set at a location designated as the Fairview Site at WSMR. The site would be located in Sierra County approximately 1 mile south of the Socorro County line in the valley between Fairview Mountain and the Mockingbird Mountains. The range would consist of two target groups, with armored personnel carrier hulks in the target groups. One Helicopter Landing Zone (HLZ) capable of accommodating two helicopters would be established. Existing roads would be used to access the general area of the target sets. While no new roads would be constructed, an access corridor would be delineated for maintenance vehicles and a bulldozer used for the placement of targets. No fuels or other hazardous materials would be handled or stored at the site.

Alternative 1 Site

The Alternative 1 Site is near the western edge of WSMR in northern Sierra County. While this location is marginally acceptable, it was not selected as the preferred location due to a lack of adequate terrain and proximity to the WSMR reservation boundary. A single target group would be established at this site consisting of five targets spaced approximately 400 meters apart, which would be arranged in a north to south orientation. The target sets within this Alternative 1 Site would be approximately 6 miles northeast of Big Gyp Mountain, approximately 2 miles west of WSMR Route 5, and approximately 3 miles south of the Gilliland Range Headquarters. The site would be approximately 2.5 miles from the WSMR boundary to the west. Operations at the site would be essentially the same as at the Fairview Site.

SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS

Proposed Action – Fairview Site

Implementation of the Proposed Action would result in minor to negligible effects, as summarized for the resources areas presented below.

Land Use. Minor effects would be expected. While operational, the gunnery assets would limit the type of future military activity that could potentially occur at the site. The Proposed Action would be compatible with the current land use designation for the northern portion of WSMR. Future use of the Fairview Site area would be limited while the target set is used as a helicopter crew training asset. No effects on public events (i.e., Bataan Memorial Death March and Trinity National Historic Site) would occur. No effects on current hunting activities would be expected. The target set would be identified as off-limits for hunters. The loss of the hunting area encompassing the site would be negligible compared with the acreage that would still be available.

Safety. Negligible effects would be expected. Surface danger zones associated with the proposed target arrays would necessitate limits on access to land areas and dirt roads within designated areas adjacent to the site during periods when the range assets were in use. This control would be considered a normal function of Range Control for operations on a secured military installation such as WSMR.

Airspace Management. Minor and localized effects would be expected. The Proposed Action would involve aircraft operations that would continue to use the same restricted airspace (i.e., R5107) as under current conditions. Use of the airspace over the Fairview Site would be significantly reduced when the target sets are in operation. The vertical component of the ricochet hazard would require that minimum overflight altitudes at 6,365 feet above ground level or higher, which would reduce the availability of

airspace in the area of target sets for non-participating low and medium altitude aircraft operations. The demand for use of the Red Rio and Oscura Ranges would be reduced.

Noise. Negligible short-duration effects would be expected. Overall aircraft operations in the affected airspace would continue at current levels. The noise generated at the target sit by operations of the HH-60 Pave Hawk and UH-1N Huey aircraft associated with the Proposed Action would not be expected to be at any levels of concern. No towns, population centers, or other sensitive noise receptors are within the area potentially affected by noise associated the Proposed Action. Populated areas adjacent to the target assets would likely not notice any change in the noise environment associated with WSMR.

Air Quality. Negligible effects would be expected. Minor short-term ground disturbance would occur during target placement and establishment of the HLZ, but these would be temporary and localized. Aircraft operations would be similar to existing operations at the Red Rio and Oscura Ranges and the slightly longer travel distance to the Fairview Site would not be considered an adverse effect contributing to air emissions. Use of the HLZ would be expected to have a negligible to minor adverse contribution to fugitive dust.

Geological Resources. Negligible to no short-term effects would be expected. The Proposed Action would require only minor ground disturbance during placement of targets and grading for the HLZ. Negligible to minor adverse effects could occur as a result of helicopter downdraft.

Water Resources. No effects would be expected. There are no perennial surface water bodies in the vicinity. Furthermore, training activities would have little potential to affect surface water or groundwater quality.

Biological Resources. Minor adverse effects could occur. There could be minor disturbance of vegetation during target placement and grading for the HLZ, but there is an abundance of similar undisturbed habitat surrounding the site. Pilots would fly over the site prior to initiating training to check for the presence of wildlife. Wildlife at military installations have been shown to be adaptable to noise, so ongoing training activities would not be expected to result in significant effects on wildlife. The western burrowing owl is the only sensitive species with any real potential for inhabiting the location identified for the Proposed Action. Surveys would be performed prior to any ground disturbances. If owls are present during the breeding or brood-rearing season, the owls would be relocated or construction would be delayed until October to allow the owls to complete their reproductive cycle. Other sensitive or protected species could occur in the project area as transients or temporary migrants.

Cultural Resources. A cultural resources survey has been completed and minor adjustments in the candidate locations for target assets at the Fairview Site have been accomplished to mitigate potential impacts. If any cultural resources are encountered during subsequent activities to implement the Proposed Action, then they would be avoided.

Socioeconomic Resources. No effects would be expected. Implementation of the Proposed Action has little to no potential to affect off-installation populations and the area around the Fairview Site is undeveloped. Therefore, no disproportionate effects on minorities, low-income populations, or children would occur in accordance with Executive Orders 12898 and 13045.

Infrastructure. No effects would be expected on utilities. Temporary and intermittent effects could occur on the dirt roads that are within the surface danger zone associated with the target sets and would be off-limits to through-traffic during training activities. The roads in the vicinity of the Fairview Site are not heavily used.

Hazardous Materials and Wastes. Negligible to no short-term effects would be expected. Small quantities of fuels and other potentially hazardous materials would be removed from the target hulks

following final placement. Minor long-term adverse effects could occur as a result of using lead ammunition at the Fairview Site. However, all of WSMR is designated as an existing range and the use of lead ammunition is allowable. Cleanup of the range from training residue would be accomplished with BMPs.

Alternative 1 Site

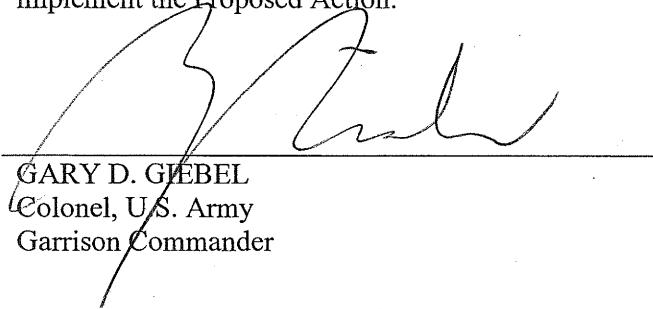
Establishment of the target sets at the Alternative 1 Site would not result in significant effects. The environmental consequences associated with the Alternative 1 Site would be essentially the same as those described for the Fairview Site.

No Action Alternative

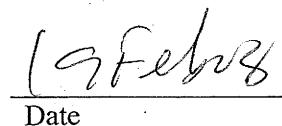
Implementation of the No Action Alternative would result in no actions being taken at the Fairview Site or the Alternative 1 Site and the continuation of existing conditions. No effects would be expected. The 58 SOW would continue to use the Red Rio Range and Oscura Range for training activities and no change would be expected to existing conditions at these ranges.

DECISION

The analyses contained in the EA demonstrate that establishment of the target sets at either the Fairview Site or the Alternative 1 Site would not result in significant environmental effects. Issuance of a Finding of No Significant Impact is appropriate, and an Environmental Impact Statement is not required to implement the Proposed Action.



GARY D. GIEBEL
Colonel, U.S. Army
Garrison Commander



19 Feb 88
Date

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1. Purpose of and Need for the Proposed Action

This Environmental Assessment (EA) has been prepared to address the potential impacts on environmental and socioeconomic resources associated with the proposed establishment of an air-to-surface helicopter gunnery training target set on White Sands Missile Range (WSMR), New Mexico. This EA evaluates the Proposed Action of constructing and operating this training facility at the Fairview area of WSMR and any reasonable alternatives to the Proposed Action, including the No Action Alternative.

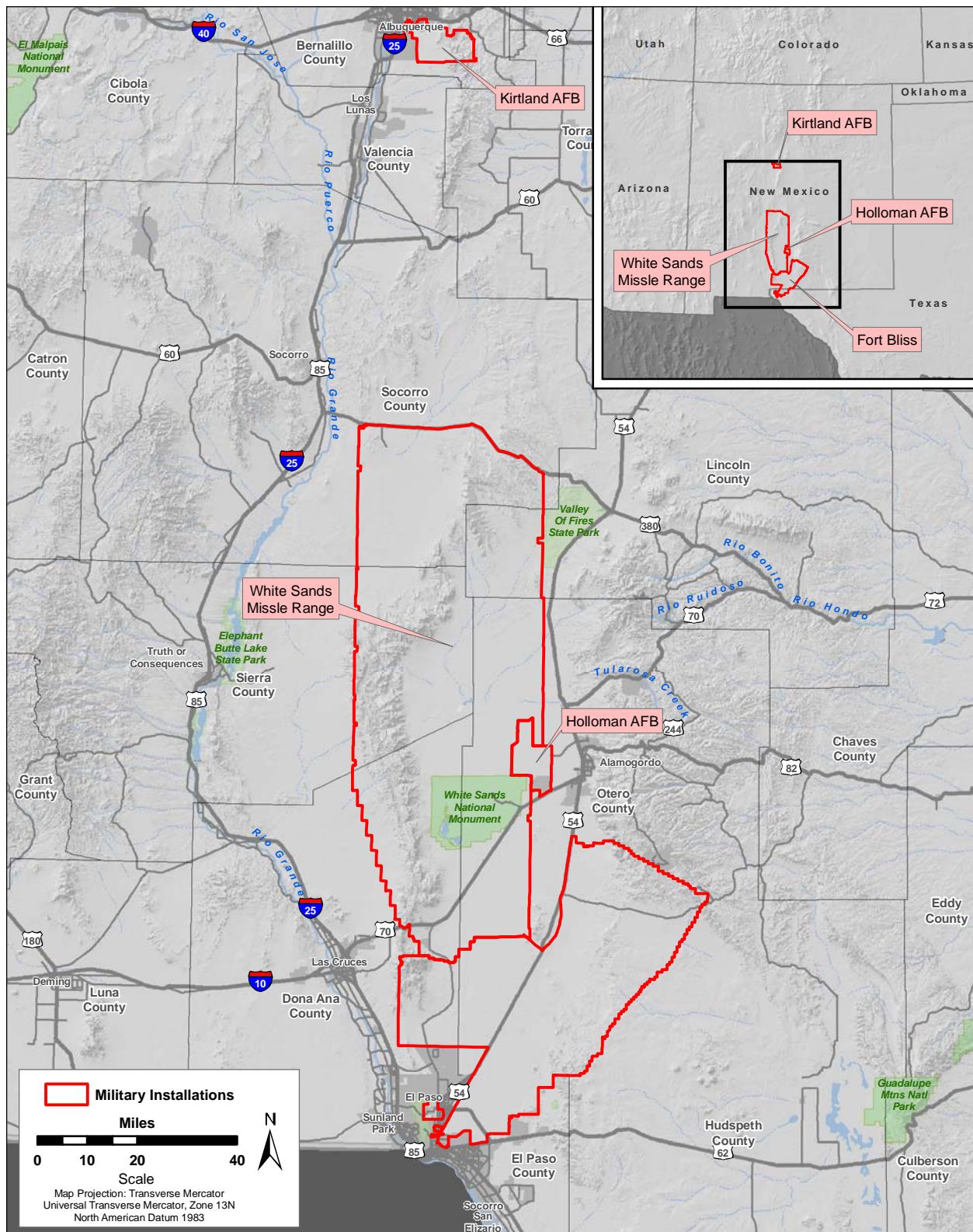
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1.1 Introduction

WSMR is managed by the U.S. Army and is operated to support Department of Defense (DOD) readiness programs that include a multiservice test facility supporting research, development, testing, and evaluation of missile and other defense systems. The installation is one of the largest military installations in the United States and encompasses 2.14 million contiguous acres, configured in an irregular-shaped rectangle 35 miles wide and 100 miles long in south-central New Mexico (see **Figure 1-1**). The installation possesses unique characteristics required by the U.S. Army, U.S. Navy, USAF, National Aeronautics and Space Administration (NASA), and other Federal and commercial testing entities and provides a secure facility to conduct safe, large-scale experiments on advanced weapons and space flight systems (DA 1998, WSMR 2002a).

The 58th Special Operations Wing (58 SOW) at Kirtland Air Force Base (AFB), New Mexico, is a unit of Air Education and Training Command (AETC) within the USAF and is the proponent of this action. Kirtland AFB is located southeast of Albuquerque, New Mexico. The 58 SOW is a tenant unit to the 377th Air Base Wing at Kirtland AFB. The mission of the 58 SOW is “to train mission-ready special operations and rescue aircrews for the world’s best air force.” Once trained, students who have completed this advanced training go on to serve with Air Force Special Operations Command (AFSOC), Air Mobility Command, Air Combat Command, Pacific Air Forces, USAF in Europe, Air Force Space Command, and Air Force Reserve and Air National Guard components. The 58 SOW maintains three operational squadrons at Kirtland AFB: the 512th Special Operations Squadron (512 SOS), which flies UH-1N (Huey) and HH-60G (Pave Hawk) helicopters; the 71 SOS, which flies the CV-22 (Osprey) tilt-rotor aircraft; and the 550 SOS, which flies MC-130H (Combat Talon II) and H/MC-130P (Combat Shadow) fixed-wing aircraft. The 58 SOW conducts advanced training for aircrews that are tasked with special operations and rescue missions. The unit also provides personnel and aircraft needed to respond to crises around the world and assist civilian authorities in regional rescues.



Sources: ESRI StreetMap USA 2005; Hillshade: U.S. Geological Survey, EROS Data Center Distributed Active Archive Center (EDC DAAC), 2005; USGS NED: ESRI 2007

Figure 1-1. Regional Location Map

One of the missions of the 58 SOW is the training of helicopter gunners and flight crews in small arms aerial gunnery for air-to-surface fire from the HH-60G Pave Hawk and UH-1N Huey helicopters. These helicopters are the only aircraft associated with the 58 SOW for which there is a need to conduct proficiency training in air-to-surface gunnery. This training is currently conducted on WSMR at the Red Rio and Oscura Ranges, located in the northern portion of WSMR. Training operations for flight crews flying from Kirtland AFB to WSMR also include navigation training in the mountainous terrain en route and various other proficiency requirements. The airspace associated with WSMR is a complex of restricted airspace (i.e., Restricted Area 5107, or R1507) designed to ensure the safety of general aviation and other nonparticipating aircraft. Air traffic control of this airspace is staffed for WSMR by the 49th Fighter Wing (49 FW) at Holloman AFB, which is located on the east-central boundary of WSMR. The 49 FW also schedules use of the ranges. The 46th Test Group sponsors USAF units interested in training at WSMR and will coordinate the use of target assets with WSMR and the 49 FW (WSMR 2005). The availability of the existing air-to-surface gunnery range assets at WSMR for training is dependent on competing uses of the airspace at WSMR, and therefore is not always available. A Test and Training Space Needs Statement (i.e., T/TSNS No. AETC-05001) has been submitted by the 58 SOW and was reviewed and approved by Headquarters USAF on 10 January 2006 (Reese 2007a).

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to establish an air-to-surface helicopter gunnery training target set on WSMR land that is specifically designed to support helicopter training requirements. The target locations would be away from air traffic associated with the existing Red Rio and Oscura range assets and the target layouts would be specifically designed for training associated with helicopter operations.

The need for the Proposed Action is to provide the 58 SOW with a long-term supplement to the Red Rio and Oscura range assets to allow the unit to achieve the proficiency levels dictated by training requirements. Due to competition with other users for use of the airspace and available existing target assets on WSMR, the 58 SOW was only granted 78 percent of the unit's requested range time in 2004, 67 percent in 2005, and 72 percent in 2006 (Reese 2007b). Creation of a new target set in a separate location from existing assets would reduce scheduling conflicts with other units, and would provide an air-to-surface gunnery training target set specifically designed for special operations aerial gunnery training in rotary-wing aircraft. If the new target set were established, the 58 SOW would be listed as the Range Operating Agency in AETC Supplement 1 to AFI 13- 212, Volume 1, *Range Planning and Operations*.

Flight crews of the 58 SOW that are flying from Kirtland AFB to WSMR are tasked with various other proficiency training requirements en route, including the use of natural terrain assets for navigation training in the mountainous terrain east of the Rio Grande River valley en route from Kirtland AFB to WSMR, practice approaches and departures at simulated remote landing sites, and refueling exercises. Efficient use of training time and aircraft fuel are essential to the ability of the 58 SOW to successfully complete the required proficiency training. A twice-a-day (daytime and nighttime) operations schedule supports more efficient use of aircraft and personnel. The combination of terrain en route and the potential air-to-surface gunnery assets at the WSMR locations would provide the 58 SOW with a critical asset to ensure efficient use of training resources.

For the proposed training asset, it is desirable that potential locations for the target set are located within close proximity to Kirtland AFB (e.g., less than 150 nautical miles [NM]), and occur on an existing military range where conflicts with other training and missions could be minimized. The only military range proximate to the 58 SOW that meets such requirements is WSMR. Within WSMR, only the Fairview area (i.e., the Proposed Action) and an alternative site just inside the western boundary of WSMR (i.e., Alternative 1) have been identified as potential locations for the target set.

Supplementing the Red Rio and Oscura Ranges with an additional target set would allow the 58 SOW to have access to a target asset without having to compete as much with higher priority agencies at the existing ranges on WSMR. This would provide flexibility in range scheduling and make it more likely that students could complete their training syllabus on time, even if student flow were to be increased.

1.3 Decision to Be Made and Decision-Maker

The WSMR Garrison Commander at WSMR will make a decision regarding the best alternative for the Proposed Action in relation to the use of range assets and general mission operations occurring at WSMR, as well as whether or not to sign a Finding of No Significant Impact (FNSI) for the Proposed Action.

1.4 Scope and Content of the EA

1.4.1 National Environmental Policy Act Requirements

The National Environmental Policy Act of 1969, “NEPA”, is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions are taken. NEPA established the Council on Environmental Quality (CEQ) that is charged with the development of implementing regulations and ensuring agency compliance with NEPA. CEQ regulations mandate that all Federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of actions that might affect the environment. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions. The process for implementing NEPA is codified in 40 CFR Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. To this end, the CEQ regulations specify that an EA be prepared to briefly provide evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or FNSI, aid in an agency’s compliance with NEPA when an EIS is unnecessary, and facilitate preparation of an EIS when one is necessary.

The EA examines potential effects of the Proposed Action and alternatives on 12 resource areas: land use, safety, airspace management, noise, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, and hazardous materials and waste. These resources were identified as being potentially affected by the Proposed Action and include applicable critical elements of the human environment, a review of which is mandated by Executive Order (EO), regulation, or policy.

1.4.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decision-making process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decision-maker to have a comprehensive view of major environmental issues and requirements associated with a proposed action. According to CEQ regulations, the requirements of NEPA must be integrated “with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively” (40 CFR 1500.2a). **Appendix A** contains examples of relevant laws, regulations, and other requirements that are often considered part of the analysis.

1.5 Interagency Coordination and Public Participation

NEPA requirements help ensure that environmental information is made available to the public during the decision-making process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. The Draft EA was made available to Federal, state, and local officials and the public for a 15-day comment period. A Notice of Availability for the Draft EA was published in the *Alamogordo Daily News*, the *Las Cruces Sun-Times*, and the *El Defensor-Chieftain* (in Socorro) on November 4, 2007. Copies of the Draft EA were available for the public to review in the Alamogordo Public Library, Socorro Public Library, Thomas Branigan Memorial Library, Truth or Consequences Public Library, and the WSMR Post Library for the duration of the 15-day public review period. Additionally, copies of the Draft EA were distributed to potentially interested Federal, state, and local agencies. One agency comment on the Draft EA was received, and that comment was considered in preparation of the Final EA. The list of persons and organizations that received the Draft EA and the one agency response are included in full in **Appendix B**.

1.6 Organization of this Document

This document is organized into seven sections. **Section 1** contains background information, a description of the purpose of and need for the Proposed Action, a statement of the decision to be made, a description of the applicable regulatory requirements, and an introduction to the organization of the EA. **Section 2** provides a detailed description of the Proposed Action, alternatives to the Proposed Action, and the No Action Alternative. **Section 3** contains a general description of the biophysical resources and baseline conditions that potentially could be affected by the Proposed Action and Alternatives, an analysis of the environmental consequences of the Proposed Action and Alternatives, and an analysis of potential cumulative effects. **Section 4** contains a summary of the findings and conclusions in this EA. **Section 5** contains a list of the reviewers and individual preparers of this document. **Section 6** lists the sources of information used in the preparation of the document. **Appendix A** includes examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis. **Appendix B** includes information and materials associated with public participation. **Appendix C** includes information on surface danger zone modeling.

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2. Description of the Proposed Action and Alternatives

This section provides detailed information on the Proposed Action and alternatives that were considered in the preparation of this EA.

2.1 Proposed Action – Fairview Site

2.1.1 Detailed Description of the Target Set Area

The Proposed Action is to establish an air-to-surface helicopter gunnery training target set on WSMR at a location designated as the Fairview Site. The location of the Fairview Site on WSMR in relation to the existing Red Rio and Oscura Range facilities is shown on **Figure 2-1** (Township 10 South, Range 4 East, Section 11). The site would be located in Sierra County approximately 1 mile south of the Socorro County line in the valley between Fairview Mountain and the Mockingbird Mountains (see **Figure 2-2**). The range would consist of two target groups, with armored personnel carrier hulks in the target groups. One Helicopter Landing Zone (HLZ) capable of accommodating two helicopters would be established. Existing roads would be used to access the general area of the target set. While no new roads would be constructed, an access corridor would be delineated for maintenance vehicles, and an approved contractor would use a bulldozer for the final placement of targets. No fuels or other hazardous materials would be handled or stored at the site.

As shown in **Figure 2-2**, one target group would consist of two sets of three durable targets each, oriented north/south. Targets in each set would be spaced 200 meters apart, with the two sets spaced 800 meters apart. The second target group would consist of two sets of two durable targets each, one set oriented northeast/southwest, and one set oriented northwest/southeast. Targets in each set would be spaced 25 to 50 meters apart, with the two sets spaced 200 meters apart. The available direction of fire and the anticipated aircraft flight direction relative to the target area for each of the target sets is shown on **Figure 2-3**.

The target hulks would be brought in on flatbed trucks and placed on the ground with no grading or other ground disturbance required. Hulks would only contain approximately 1 gallon of fuel to assist in the placement of the target. Once at the site, all remaining fluid would be drained from the hulks before live-fire training operations would occur.

The HLZ, a square area 500 feet on a side, would not involve the construction of any facilities, although very limited grading of less than 1 acre at the site might be required, depending on site conditions. The specific site chosen for the HLZ would be as level as possible in order to minimize the need for grading. The HLZ would be used for administrative landings of the aircraft (e.g., service to jammed weapon, on-the-spot student instruction, exchange of students between aircraft).

The proposed target set could be used by the 58 SOW up to twice a day, Monday through Friday, with training taking place equally between daylight and nighttime hours. A total of four aircraft would typically use the target set per day, with two aircraft used for daylight operations and two for nighttime. Small arms aerial gunneries from the HH-60G Pave Hawk and UH-1N Huey helicopters would use linked ball ammo, full-jacketed, lead core rounds. Gunneries are defined as any sortie where the intent is to fire the helicopter's defensive systems (i.e., 7.62mm minigun and .50 caliber) while airborne at predetermined targets on the ground. Each aircraft can be complemented with 6,000 rounds. While the 58 SOW would be the primary user of the proposed target sets and would own and maintain the targets, the aerial gunnery

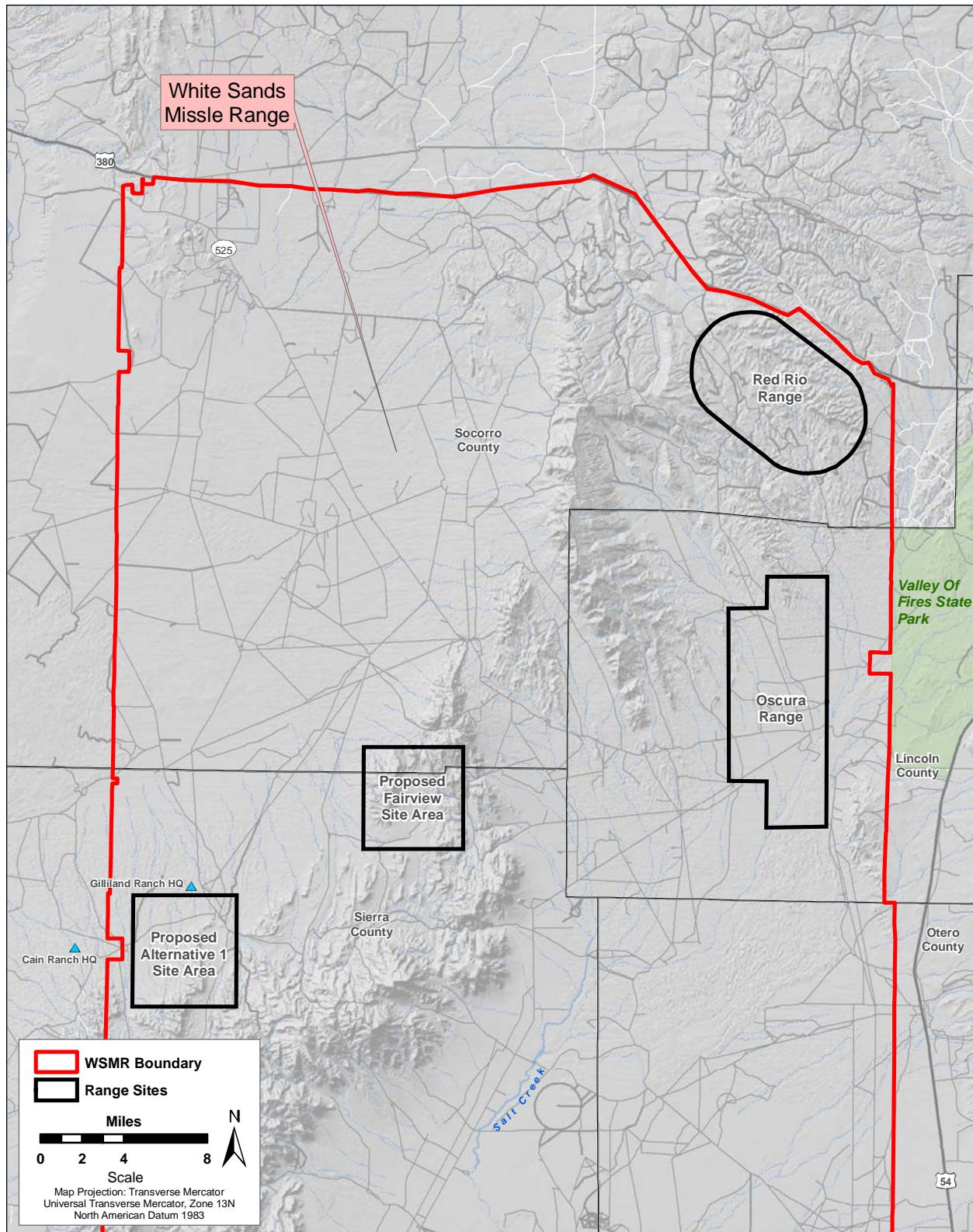


Figure 2-1. Locations of Red Rio and Oscura Ranges, the Fairview Site, and the Alternative 1 Site

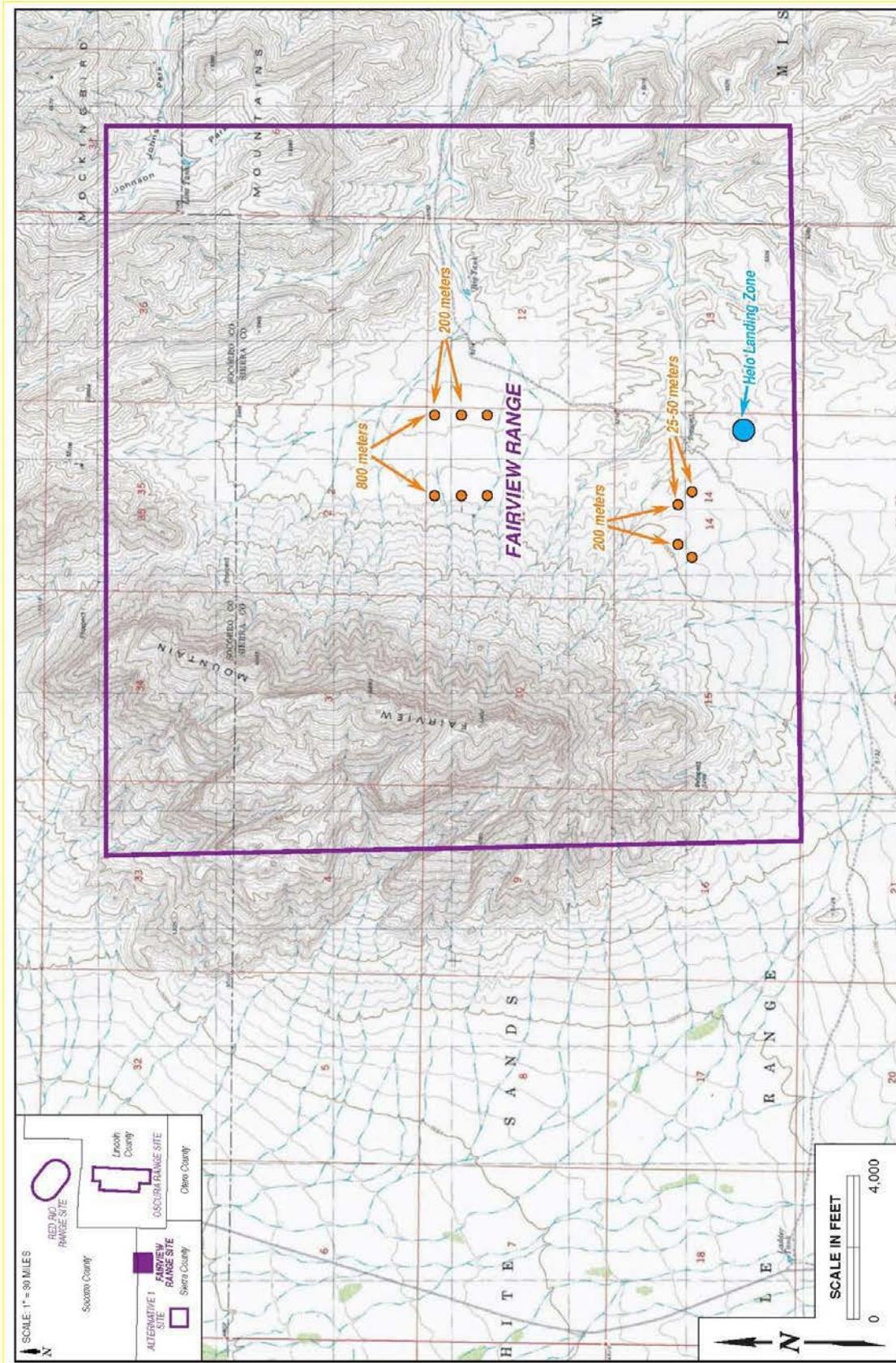


Figure 2-2. Proposed Target Placement and Helicopter Landing Zone for the Proposed Fairview Site

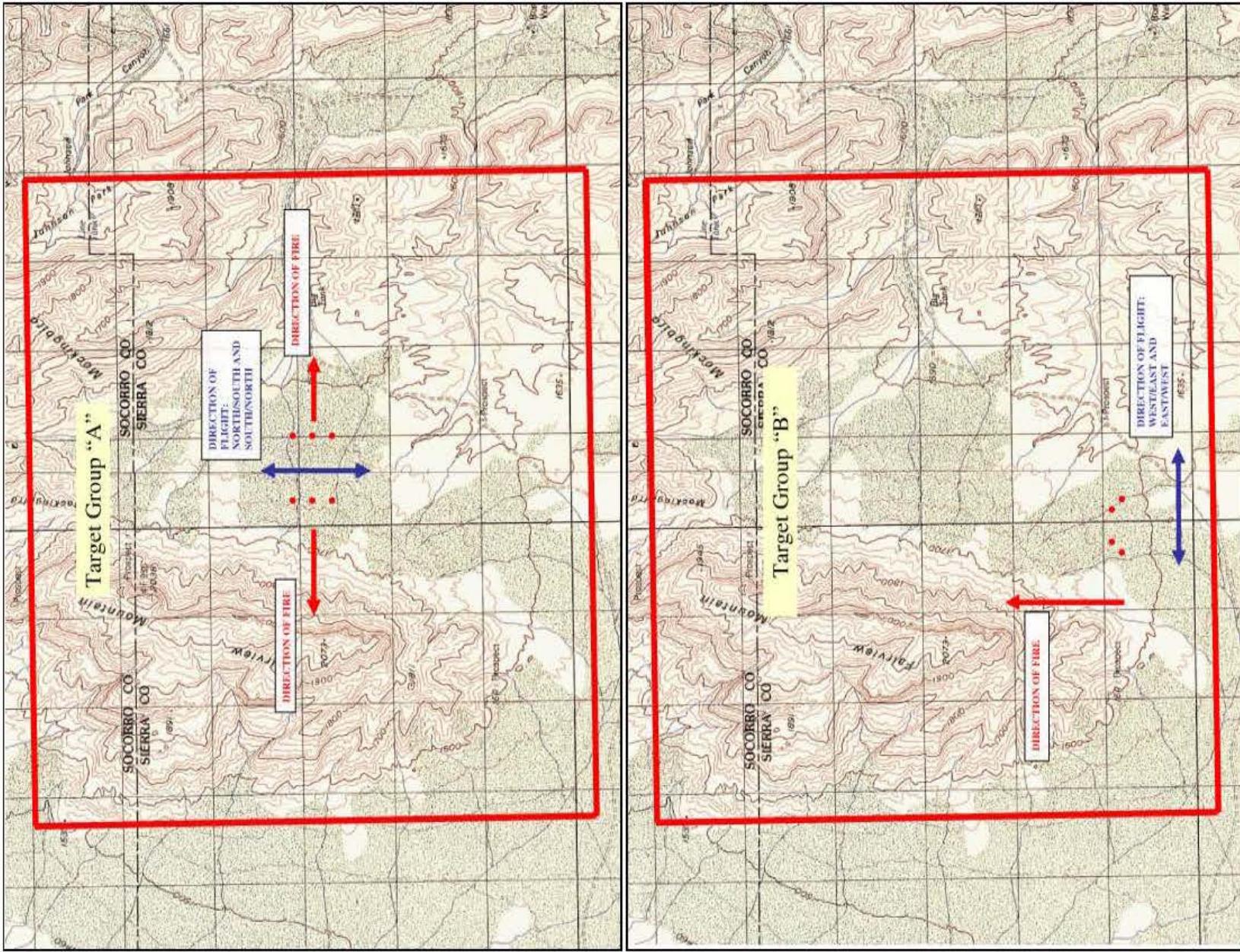


Figure 2-3. Direction of Fire for the Fairview Target Sets

training requirements of non-58 SOW units would be considered in the scheduling process (e.g., to provide a training asset for the 160th Special Operations Aviation Regiment [Airborne]). Coordination for permission to schedule use of the targets would be through the 58 SOW.

If fire conditions permit, tracer rounds would be used in the ammunition belt in a 9 to 1 ratio. The use of tracer rounds at the proposed range would not require a fire break (see **Section 3.2.1**).

Scheduling and use of the proposed range would be in accordance with the existing *Tri-Service Aviation Training Operations Letter of Agreement* between WSMR, the USAF, and the U.S. Navy that governs range utilization of all air-to-surface range assets at WSMR (WSMR 2005). Should the proposed Fairview Site target set be approved for implementation, WSMR could further define the use of the Fairview Site through some form of outgrant (e.g., special use permit or license) to establish how the land in the target area would be maintained during its use and the terms for cleanup once the site is no longer used as a target area (Pigg 2007).

Aircraft operations in the vicinity of Kirtland AFB would not be affected by implementation of the Proposed Action. No additional personnel would be necessary either within the 58 SOW or at WSMR (Reese 2007c).

2.1.2 Proposed Aircraft Operations Associated with the Fairview Site

There would be an maximum annual total of approximately 920 operations of the HH-60G Pave Hawk and UH-1N Huey helicopters from Kirtland AFB to the new target set at WSMR to fulfill training objectives (based on 46 training weeks per year, times 2 operations per day, times 5 days of operations per week for 2 aircraft). These training totals are the same as currently programmed for the existing air-to-surface range assets at WSMR. The aircraft would fly to WSMR from Kirtland AFB under Visual Flight Rules (VFR) using the same uncharted routes as are currently used. To practice navigation skills en route, the aircraft fly south from Kirtland AFB on a route along the mountains east of the Rio Grande River valley until they arrive at the airspace associated with WSMR (i.e., Restricted Area 5107). They might also occasionally transit to WSMR via one of the helicopter aerial refueling route until arrival at the boundary of the Restricted Area (Reese 2007c).

The approach to the target set would be from the west from along the western boundary of WSMR until cleared to proceed by air traffic control. Aircraft would be required to overfly the target area at an altitude below 500 feet above ground level (AGL) prior to engagement for safety reasons to ensure no people, wildlife, or potential hazards exist in the line of fire. Once at the target area, aircraft would fly in prescribed patterns. Engagement of targets by student gunners would be from altitudes of 100 to 300 feet AGL. The aircraft would fly at airspeeds of 80 to 110 knots. Direction of fire is restricted somewhat for safety reasons associated with ricochet hazards. However, the high ground relief on both sides of the northernmost target set would allow the weapons on both sides of the aircraft to be fired simultaneously (Reese 2007c).

Flares are currently used at the Red Rio and Oscura Ranges and are a part of the training, thought their use is periodic. The 58 SOW would like to be able to continue to have this training opportunity available; however, the use of flares would be dictated as it currently is by fire hazard conditions.

2.1.3 Permit Requirements

Currently, no permits have been identified as needed to establish an air-to-surface helicopter gunnery training target set on WSMR at the location designated as the Fairview Site.

2.2 Alternatives to the Proposed Action

2.2.1 Use of an Alternative Location on WSMR – Alternative 1 Site

As a possible alternative location on WSMR to establish the new target set, a site was identified just inside the western boundary of WSMR in Sierra County, east of the Cain Ranch Headquarters (see **Figure 2-1**). The target set within this Alternative 1 Site would be approximately 6 miles northeast of Big Gyp Mountain, approximately 2 miles west of WSMR Route 5, and approximately 3 miles south of the Gilliland Range Headquarters. The site would be approximately 2.5 miles from the WSMR boundary to the west (Township 11 South, Range 2 East, Section 13). Operations at the site would be the same as at the Fairview Site except as otherwise indicated below.

A single target group would be established at this site consisting of five targets spaced approximately 400 meters apart, which would be arranged in a north-to-south orientation (see **Figure 2-4**). No HLZ has been proposed for this alternative location due to its close proximity to the western boundary of WSMR. Existing roads would be used during the placement of targets, and therefore, no terrain alterations would be anticipated.

This site would meet the objective of ensuring efficient use of training time and aircraft fuel by offering opportunities en route for navigation training in mountainous terrain and refueling exercises. When flying to the Alternative 1 Site location, the terrain en route from Kirtland AFB to WSMR would provide the 58 SOW flight crews with the same useful training resource as encountered when flying to the Fairview Site.

For the Alternative 1 Site, aircraft operations once inside WSMR airspace and after arrival at the target area would be essentially the same as that described for the Fairview Site target set.

While this location is marginally acceptable, it was not determined to be the preferred location due to a lack of preferred terrain in the vicinity of the target set and the relatively close proximity to the WSMR reservation boundary. The site lacks terrain features that could act as a natural barrier or backstop that would reduce the ricochet hazard. This reduces the available field of fire and restricts aircraft to only fire from one side during training exercises. Additionally, the target array offers less training versatility than at the Fairview location and the site would not have an HLZ. However, the Alternative 1 Site is a viable alternative and is carried forward for analysis in this EA.

2.2.2 No Action Alternative

CEQ regulations require the analysis of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be evaluated.

Under the No Action Alternative, no actions would be taken at the Fairview Site or the Alternative 1 Site and the 58 SOW would continue to schedule use of the Red Rio and Oscura Ranges through the 49 FW. Range availability and potential conflicts with other users of airspace and range assets on WSMR could continue and helicopter gunnery proficiency training backlogs would also continue to exist. However, the No Action Alternative is carried forward for further analysis in this EA.

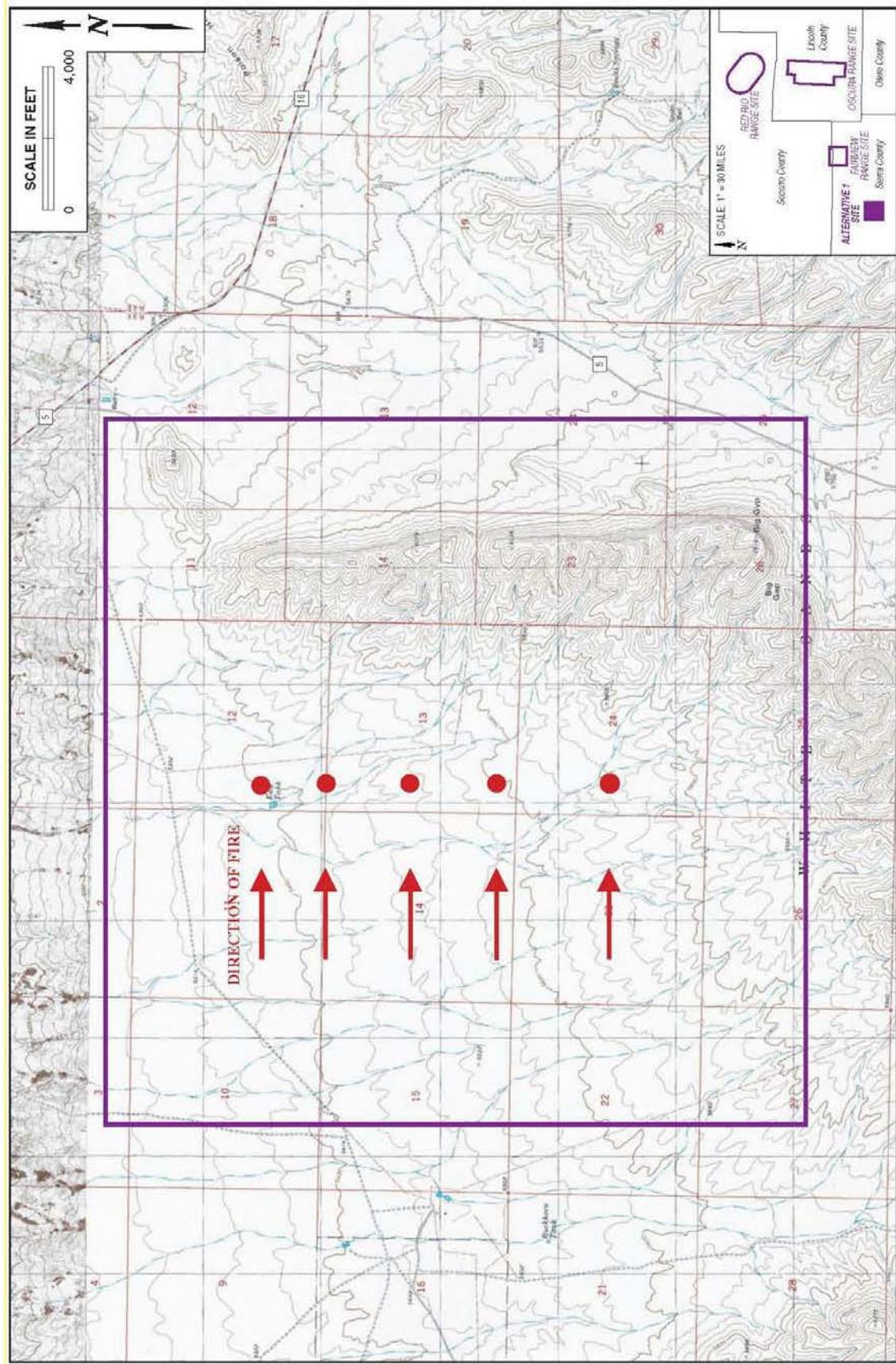


Figure 2-4. Proposed Target Placement for the Alternative 1 Site

2.3 Alternatives Eliminated from Further Detailed Study

The alternative to use another existing range at a location other than WSMR was evaluated to determine if it could meet the training requirements of the 58 SOW. The best candidate range that could be identified was determined to be the Melrose Range, which is located 137 NM east of Albuquerque, New Mexico. The Melrose Range is a bombing, gunnery, and electronic warfare complex currently operated by the 27 SOW at Cannon AFB, New Mexico, which is 20 NM to the east of the range complex.

Although the 58 SOW does occasionally visit the Melrose Range, it is not a training destination that offers efficient use of aircraft fuel and training time under most circumstances. There are minimal effective training assets en route to the range area (e.g., mountainous terrain, training routes) so flight crew training is somewhat limited to what can occur in the immediate area of the range. In addition, the range is operated in circadian cycles, typically with 2 weeks of night operations followed by 2 weeks of daytime operations. The range is only staffed for operations during these sequences and therefore would not be available for the twice-a-day (i.e., daytime and nighttime) operational schedule followed by the 58 SOW to meet its training requirements. Due to these factors, this alternative was not considered to be a viable alternative and therefore was eliminated from further detailed study in this EA.

3. Affected Environment and Environmental Consequences

Affected Environment. The affected environment describes the environmental and socioeconomic resources and conditions that have the potential to be affected by an action and provides information to serve as a baseline from which to identify and evaluate potential environmental and socioeconomic consequences that could result from implementation of the Proposed Action. Baseline conditions represent current conditions. In compliance with NEPA, CEQ guidelines, and AR 200-2, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. Certain valued environmental components within resource areas are not evaluated in this EA because they are not present or are spatially removed from the affected environment; those valued environmental components that are not discussed or evaluated in detail are identified in the subsection addressing that resource area.

The *Final Environmental Assessment for Training Ranges at White Sands Missile Range, New Mexico* (WSMR, NMNG, and USAEC 2006) was recently prepared for the proposed Warrior Training Course at WSMR. This document represents current baseline conditions at WSMR and provides a description of the affected environment. Where applicable, the *Final Environmental Assessment for Training Ranges at White Sands Missile Range, New Mexico* is incorporated by reference into this EA. In addition, the *Final Environmental Assessment Transforming the 49th Fighter Wing's Combat Capability* (USAF 2006a) addressing operations at the Red Rio and Oscura Ranges also is incorporated by reference and serves to support the baseline for the No Action Alternative.

Environmental Consequences. The environmental consequences presented in this section provide an evaluation of impacts that could result from implementing the Proposed Action or alternatives. The general approach followed throughout this section is to describe briefly the range of impacts that would be of concern and then provide a discussion of impacts that have the potential to be associated with the Proposed Action.

The specific criteria for evaluating potential environmental effects of the Proposed Action or Alternatives are also presented under each resource area. The significance of an action is measured in terms of its context and intensity. The following elaborates on the nature of characteristics that might relate to various environmental effects. Individual resource area presentations provide more subject-specific evaluation criteria.

- *Short-term or long-term.* In general, short-term effects are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term effects are those that are more likely to be persistent and chronic.
- *Direct or indirect.* A direct effect is caused by an action and occurs around the same time at or near the location of the action. An indirect effect is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- *Minor, moderate, or significant.* These relative terms are used to characterize the magnitude or intensity of an impact. A minor effect is slight, but detectable. A moderate effect is readily apparent. Significant effects are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation in order to fulfill the policies set forth in NEPA.

- *Adverse or beneficial.* An adverse effect is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial effect is one having positive outcomes on the man-made or natural environment.

3.1 Land Use

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. There is, however, no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and definitions vary among jurisdictions.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning include written master plans/management plans and zoning regulations. In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its “permanence.”

3.1.1 Affected Environment

Surrounding Land Use. WSMR is one of the largest expanses of relatively undeveloped land remaining in the southwestern United States, with land in Socorro, Lincoln, Sierra, Otero, and Doña Ana counties. Holloman AFB and Fort Bliss adjoin WSMR on the east and southeast, respectively. The North Extension call-up area adjoins the northernmost boundary, and the Aerobee 350, Abres, and Abres 4A extension call-up areas adjoin the entire western boundary. The U.S. Army has agreements in place regarding these call-up areas to evacuate when a WSMR activity could affect this land. The call-up areas are mostly used for grazing and are sparsely inhabited (WSMR 2002b). Population centers near WSMR include Las Cruces and El Paso to the south, Alamogordo and Tularosa to the east, Carrizozo to the northeast, and Truth or Consequences to the west. Other surrounding areas include Cibola National Forest, Lincoln National Forest, Bosque Del Apache National Wildlife Refuge, Sevilleta National Wildlife Refuge, and Mescalero Apache Reservation.

The Fairview Site is not near WSMR boundaries. The off-installation land use adjacent to the Alternative 1 Site is primarily rangeland that is managed by the Bureau of Land Management (BLM), as well as some land that is managed by the state (BLM 2003).

Land Use on WSMR. The installation is primarily designated for military testing and training with some limited recreational opportunities for the public. NASA’s White Sands Test Facility, the San Andres National Wildlife Refuge, and the White Sands National Monument are within WSMR’s main range boundaries. The main range is used for tests and evaluations of tri-service missile systems, high-energy laser and directed-energy systems, air-defense fire-distribution systems, space systems, and surface-to-surface missile systems. Operational support areas on the main range include the Stallion Range Center, Oscura Range Center, North Oscura Range Center, Rhodes Canyon Range Center, and the Main Post. The functions of range centers change depending on military missions (WSMR 2002b).

Public access to WSMR is generally restricted and granted only in accordance with security requirements. However, WSMR annually conducts the Bataan Memorial Death March in March, and grants public access to the Trinity National Historic Site twice a year, once in April and again in October.

Game hunting on WSMR is permitted for recreation and wildlife population management (consistent with AR 200-3, *Natural Resources—Land, Forest and Wildlife Management*). Since the 1950s, WSMR and the New Mexico Department of Game and Fish (NMDG&F) have cooperated to conduct hunts for big game (e.g., oryx, pronghorn, and cougar) and small game (e.g., dove and quail).

There are two big game and one small game hunt areas that encompass the Fairview Site and the Alternative 1 Site. Oryx hunts in the Stallion Range Hunt Area are scheduled 1 year in advance and conducted from August through March. In 2007, six premier oryx hunts have been conducted. The Northern San Andres Oryx Population Reduction Hunt Area is immediately south of the proposed Fairview Site. This hunting area is for security badged personnel and their guests who have a valid hunting permit from the NMDG&F; hunting in this area occurs from May through March. Oryx is the primary species hunted at both big game areas, but cougar are hunted on occasion as well. Small Game Unit No. 4 coincides with the Fairview and Alternative 1 sites. Dove season includes the months of September and December, and quail season is from 15 November through 15 February. Hunting within designated areas only occurs on nonduty days and weekends. Furthermore, all hunting activities at WSMR are conducted in accordance with the *White Sands Missile Range Installation Hunting Program Guidance, Policies, and Procedures*, and EO 13443, *Facilitation of Hunting Heritage and Wildlife Conservation*.

Land at and in the vicinity of the Fairview area is in its natural state and currently is not actively used by the military; however, as a part of WSMR, the area is designated for military use. For the Alternative 1 Site, land use is the same as the Fairview Site.

3.1.2 Environmental Consequences

Significance Criteria

The level of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of a proposed action with existing conditions. In general, a land use impact would be adverse if it were to result in any of the following:

- Was inconsistent or in noncompliance with existing land use plans or policies
- Precluded the viability of existing land use
- Precluded continued use or occupation of an area
- Was incompatible with adjacent land uses to the extent that public health or safety is threatened
- Conflicted with planning criteria established to ensure the safety and protection of human life and property.

Proposed Action – Fairview Site

Land use in the vicinity of the Fairview Site on WSMR is intended for use as a military testing and training area, and because the proposed use is consistent with this intended use, no land use incompatibilities would be expected to exist. While the target sets are in use, future military operations that could use the site would be limited. Furthermore, if the Fairview Site were no longer used for the gunnery, then future land uses might require site cleanup prior to construction and other kinds of operations. This would not be considered an adverse impact.

No effects on surrounding land use would be expected. Establishment of the target set and HLZ at the Fairview Site would have no effect on land use surrounding WSMR because the 58 SOW would continue to use existing helicopter routes from Kirtland AFB to the WSMR airspace and back to Kirtland AFB.

No effects on public events on WSMR or hunting programs would be expected. Military training activities would not be scheduled on those days of the year that WSMR is open to the public for the Bataan Memorial Death March or the Trinity National Historic Site. Furthermore, those events would not occur in the vicinity of the Fairview Site. Training activities would be expected to occur only during the week, and hunting programs normally occur on the weekends, so scheduling conflicts would not be expected on recreational hunting access at WSMR. Hunters are required to be aware of and follow safety protocol when hunting on ranges, which would include avoidance of areas with known unexploded ordnance or other safety hazards (see **Section 3.2** for discussion of safety). In the event that the Fairview Site would be marked as off-limits for recreational hunting, the effects would be negligible given the large expanse of hunting land that would still be available.

Alternative 1 Site

Land use in the vicinity of the Alternative 1 Site on WSMR is intended for use as a military testing and training area, and because the proposed use is consistent with this intended use, no land use incompatibilities would be expected to exist. While the target sets are in use, future military operations that could use the site would be limited. Furthermore, if the Alternative 1 Site were no longer used for the gunnery, then future land uses might require site cleanup prior to any use for other kinds of operations. This would not be considered an adverse impact.

Construction and operation of the target set at the Alternative 1 Site would have no effect on land use surrounding WSMR because the 58 SOW would continue to use existing routes from Kirtland AFB to the WSMR and back to Kirtland AFB. The Alternative 1 Site is close to the western WSMR boundary, but it is not anticipated that operations would result in land use incompatibles.

No effects on public events on WSMR or hunting programs would be expected. Refer to discussion for the Fairview Site regarding public access and hunting programs.

No Action Alternative

No effects on land use would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or the associated impacts from current operations.

3.2 Safety

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' health and safety during construction-type activities or public safety during construction-type activities or subsequent operations. Range safety addresses the procedures used to ensure that ordnance fired on the range do not pose a risk to either range users or nonparticipating personnel or equipment in the vicinity of the range. Wildland fire management practices provide mitigation strategies to reduce the severity of fire outbreaks for fires originating from natural phenomena and mission-related events.

3.2.1 Affected Environment

Construction Safety. The health and safety of onsite military and civilian workers during construction activities are safeguarded by numerous DOD and USAF regulations, which are designed to comply with standards issued by the Occupational Safety and Health Administration and the U.S. Environmental Protection Agency (USEPA). Since the proposed target set would involve minimal construction-type activities, general construction site safety is not discussed in detail in this EA.

Explosives, Munitions, and Range Safety. Adherence to safety protocols is the primary factor in maintaining and operating a safe range. Such protocols establish policy and assign responsibilities to sustain and maintain ranges and protect DOD personnel and the public from explosive hazards. Range safety primarily depends on adhering to established range safety procedures, such as those set forth in DOD Directive 4715.11, *Environmental and Explosives Safety Management on Operational Ranges Within the United States*, and other DOD, USAF, and U.S. Army guidance.

Unexploded ordnance (UXO) is any munitions, weapon delivery system, or ordnance item that contains explosives, propellants, or chemical agents. UXO consists of munitions that (1) are armed or otherwise prepared for action; (2) are launched, placed, fired, or released in a way that they cause hazards; or (3) remain unexploded either through malfunction or design. UXO presents both an immediate safety danger (from explosion) and a long-term health threat (from toxic contamination). No UXO is known to occur at the proposed location site. However, since all of WSMR is treated as an active range, all areas are suspected to contain UXO hazards (WSMR, NMNG, and USAEC 2006).

Proposed live-fire ranges are evaluated to assess the potential for ordnance fired on a range to ricochet and travel outside of the immediate area of the line-of-fire for the range. This ricochet analysis provides guidance for the associated safety risks, either to range users onsite or to relatively far away nonparticipating personnel or equipment. Surface danger zones are established using computer modeling to ensure that known hazardous areas are incorporated into procedures associated with use of the range assets. This might involve closing off access to areas adjacent to a range facility to ensure that ricochet hazards do not pose a safety risk. Range design methods utilize natural terrain features to act as a backstop or barrier that can reduce the ricochet hazard. An analysis of the ricochet hazard could limit the range of fire associated with a particular range asset.

Wildland Fire Management. The combination of historical land uses, drought, and vegetation buildup has resulted in the need for wildland fire management at WSMR. Some risk of fire is associated with operations at live-fire ranges. Wildland fires can disrupt military missions, decrease visibility, and harm or destroy infrastructure and other valued resources. WSMR currently has an Integrated Wildland Fire Management Plan (IWFMP) that addresses fire protection on the installation (WSMR 2002a). The IWFMP addresses fires originating from natural phenomena and mission-related events and describes mitigation strategies to reduce the severity of fire outbreaks.

3.2.2 Environmental Consequences

Significance Criteria

If implementation of the Proposed Action were to substantially increase risks associated with the safety of military personnel or the local community, or substantially hinder the ability to respond to an emergency, it would represent a significant impact or increase safety risks to unacceptable levels.

Proposed Action – Fairview Site

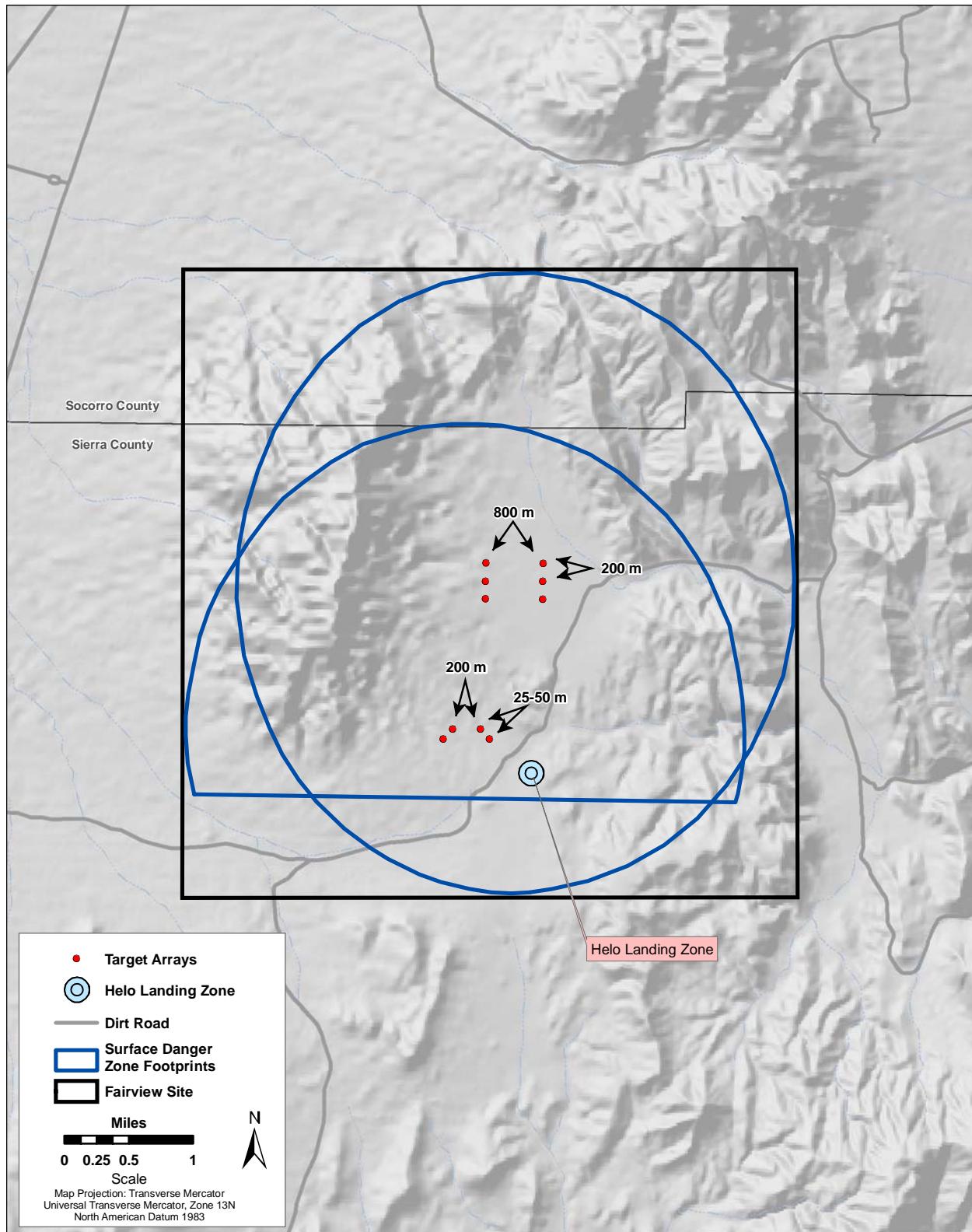
Explosives, Munitions, and Range Safety. The area identified for the Fairview area target set location has no history of UXO discovery (Prather 2007). Therefore, UXO inspection of the site would not be required before placement or use of the targets. Should UXO be found at the site during use or as a result of field investigations (e.g., during any cultural resources survey), it would be marked and avoided. WSMR personnel with expertise in UXO disposal would then be called to the site to dispose of it properly.

To assess the safety issues associated with the surface danger zones for the proposed target set alternatives, the USAF utilized the *SafeRange* program to model the footprints for the surface danger zones associated with the proposed range layouts (Reese 2007d). **Appendix C** provides the output of those modeling efforts. The ricochet analysis assumed flat topography and the use of ammunition (.50 cal machine gun rounds) producing the widest footprint and thus provided a conservative scenario. The results of the ricochet analysis were then used to assess various lines-of-fire associated with target layouts to determine the final design for the target arrays.

The results of the ricochet analysis modeling for the Fairview Site and Alternative 1 Site, and the associated surface danger zone footprints, are presented in **Appendix C**. **Figure 3-1** shows the surface danger zone footprint for the Fairview Site, and for comparison **Figure 3-2** shows the surface danger zone for the Alternative 1 Site. The results of the ricochet analysis contributed to the selection of candidate locations for the target assets and the flight tracks to be flown by participating aircraft firing on the target assets. The direction of fire for the Fairview Site is restricted as dictated by the ricochet analysis and was shown previously in **Figure 2-3**. Access within the hazard area for nonparticipating personnel would be prohibited during the scheduled use of the target sets to ensure their safety. Some roads in the vicinity of the Fairview target set within the hazard area would be temporarily closed during scheduled use. Protocols and procedures are already in place at WSMR through Range Control functions that greatly control authorizations to move across and/or enter areas within WSMR. These functions would ensure proper control of access to the target set area when the target assets are in use.

The vertical ricochet hazard danger zone would be above the area associated with the horizontal hazard up to a maximum of 6,365 feet AGL. In accordance with USAF Engineering Technical Letter 06-11, Attachment 1 (USAF 2006b), the .50 cal machine gun ammunition used in the conservative case modeling approach is listed as having a vertical danger zone of 1,940 meters (6,365 feet). Therefore, the vertical danger zone at the Fairview Site is not expected to be above 6,365 feet AGL, and restrictions to overflights above this altitude should not be necessary. The vertical hazard would dictate associated restrictions to aircraft operations above the target sets only during use of the target sets. Vertical target hazard restrictions are a standard practice associated with the use of ranges and is the current practice associated with the use of the Red Rio and Oscura Ranges. Control of access within the hazard area is a function of Range Control and is not considered an adverse impact.

Wildland Fire Management. Range management personnel at WSMR have studied the existing dirt roads in the area of the Proposed Action and determined that they would be sufficient to act as firebreaks and control potential brush fires caused by use of the range assets. Such small fires generally would be allowed to burn themselves out (Christiansen 2006). Several fire models (i.e., assessment of fire risk potential and available fuel loads) were used in making this determination and were based on existing vegetation communities for WSMR (Muldavin et al. 2000). Lack of fine fuels in the area reduces the likelihood that a fire could sustain itself long enough to become a major wildfire. Also, lightning-caused fires occur regularly across WSMR, further reducing the available fuel. As an additional level of precaution, tracer rounds would only be used when fire conditions permit their use (i.e., low fire danger).



Sources: ESRI StreetMap USA 2005; USGS NED: ESRI 2007

Figure 3-1. Surface Danger Zones for the Fairview Site

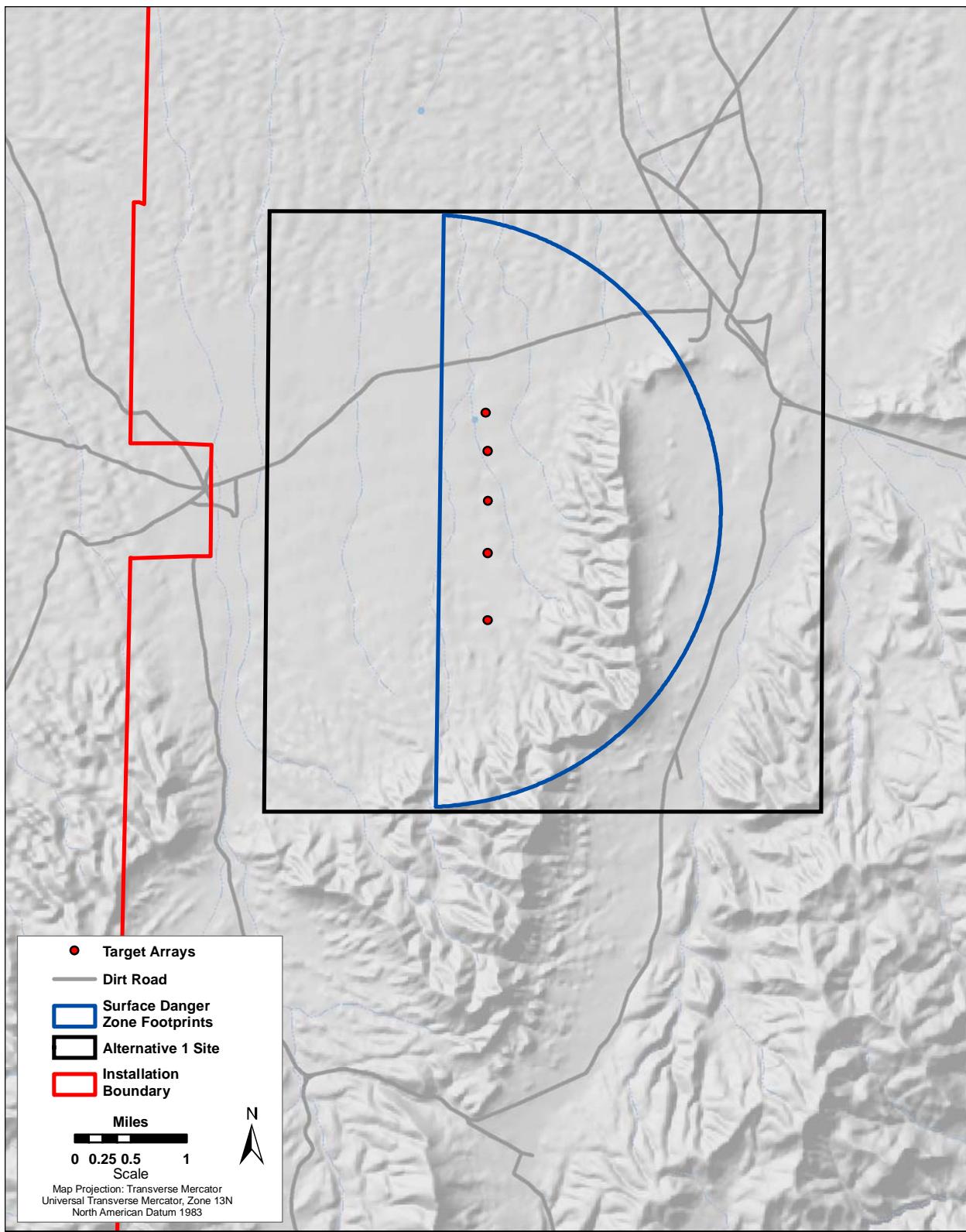


Figure 3-2. Surface Danger Zones for the Alternative 1 Site

No change to the WSMR IWFMP (WSMR 2002a) would be required. Therefore, impacts on wildland fire management would be minor.

Alternative 1 Site

Explosives, Munitions, and Range Safety. UXO is not known to occur in the area, but should it be found it would be disposed of in the same manner described under the Proposed Action.

Ricochet analyses were also used to evaluate target placement options for the Alternate 1 Site, and the information guided the placement of target lines, aircraft flight patterns when firing on the target assets, and restrictions to the direction of fire.

The firing direction at the Alternative 1 Site is restricted as dictated by the ricochet analysis and was shown previously in **Figure 2-4**. The surface danger zone for the Alternate 1 Site is illustrated in **Figure 3-2**. The vertical hazard would be identical to that associated with the Fairview Site. Access within the hazard area for nonparticipating personnel would be prohibited during the scheduled use of the target sets to ensure their safety. Some roads in the vicinity of the Alternative 1 Site target set within the hazard area would be temporarily closed during scheduled use. Control of access within the hazard area is a function of Range Control and is not considered an adverse impact.

Wildland Fire Management. Fire conditions for the Alternative 1 Site are similar to those described under the Proposed Action. Fire management procedures would be the same as under the Proposed Action. Tracer rounds would only be used when conditions permit their use. Therefore, no significant impacts would be expected to occur to wildland fire management at WSMR.

No Action Alternative

No effects on safety issues would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.3 Airspace Management

Training requirements for active-duty and reserve components of the military that involve the use of military airspace are specified in regulations written by their host commands, including those for the 58 SOW. These regulations specify the type, frequency, and specific components of training that aircrews are required to accomplish to maintain proficiency standards necessary to meet expected wartime tasking and contingency operations.

Airspace management procedures assist in preventing potential conflicts or aircraft accidents associated with aircraft using designated airspace in the United States, including restricted military airspace. Airspace management is facilitated through the use of specifically identified airspace defined vertically and horizontally in physical terms and also by duration of use. Such airspace demarcations are shown on aeronautical maps used by pilots to navigate with while flying.

Airspace management is defined as the coordination, integration, and regulation of the use of airspace. Categories and types of airspace are dictated by several elements: the complexity and density of aircraft movement, the nature of aircraft operations, the level of safety required, and national and public interest in the airspace. Airspace management is an important issue when considering potential environmental and safety effects of a proposed action since it dictates the types of aircraft activities that occur at

different locations and altitudes. The Federal Aviation Administration (FAA) has overall responsibility for managing airspace through a system of flight rules and regulations, airspace management actions, and air traffic control procedures. The FAA accomplishes this through close coordination with state aviation and airport planners, military airspace managers, and other entities to determine how airspace can be used most effectively to serve all interests. All military and civilian aircraft are subject to Federal Aviation Regulations.

Because airspace is a finite resource, it must be managed and used equitably to serve general, commercial, and military aviation needs. The FAA manages all airspace and has established various airspace designations to protect aircraft while operating near and between airports, or operating within airspace identified for defense-related purposes. The FAA has acknowledged the need for military aircraft to conduct certain training operations within airspace that is separated from other types of civilian and commercial aircraft and sets aside such airspace for military operations. Military operations are generally conducted within designated airspace and follow specific procedures to maximize flight safety for nonparticipating civil or military aircraft.

The FAA regulates military operations in the National Airspace System through the implementation of FAA Handbook 7400.2E and FAA Handbook 7610.4J, *Special Military Operations*. The latter was jointly developed by the DOD and FAA to establish policy, criteria, and specific procedures for air traffic control planning, coordination, and services during defense activities and special military operations.

Airspace is described in terms of its principal attributes, namely controlled and uncontrolled airspace, special use airspace, military training routes, en route airways, airports and airfields, and air traffic control. Jet routes, all above 18,000 feet (5,486 meters), are well above the activities proposed and are thus not considered as part of this analysis.

There are two categories of airspace, or airspace areas: regulatory (i.e., Classes A, B, C, D, and E airspace areas; restricted areas; and prohibited areas) and nonregulatory (i.e., military operations areas, warning areas, alert areas, and controlled firing areas). These two categories are further divided into four classifications: controlled, uncontrolled, special use airspace, and airspace for special use. The categories and types of airspace are dictated by the following:

- The complexity or density of aircraft movement
- The nature of the operations conducted within the airspace
- The level of safety required
- National and public interest in the airspace.

Air traffic control procedures provide for aircraft to be flown under instrument flight rules (IFR) and visual flight rules (VFR) conditions. VFR air traffic flies below 18,000 feet above mean sea level (MSL) using visual references such as towns, highways, and railroads as a means of navigation. VFR aircraft can also follow Federal airways at altitudes not used by aircraft on IFR. VFR conditions rely heavily on “see-and-avoid” procedures that require pilots to be visually alert for and maintain safe distances from other aircraft, populated areas, obstacles, or clouds. Most other air traffic (including air passenger commercial carriers, business aircraft, and military aircraft) operate under IFR conditions that require pilots to be trained and appropriately certified in instrument navigational procedures. The respective procedures established under VFR and IFR for airspace use and flight operations help segregate aircraft operating under each set of rules. Military pilots are trained for and use both VFR and IFR conditions.

3.3.1 Affected Environment

The airspace associated with WSMR is a complex of restricted airspace designed to ensure the safety of general aviation and other nonparticipating aircraft. Key military and civilian airspace in the study area is

illustrated in **Figure 3-3**. Air traffic control of this airspace is provided for WSMR by the 49 FW at Holloman AFB, which is located on the east-central boundary of WSMR and is south of the existing gunnery range areas.

All of the airspace associated with WSMR and Holloman AFB is restricted. Both the Fairview Site and the Alternative 1 Site are within R5107B, which is the same airspace as is currently used to access the Red Rio and Oscura Ranges. Civilian and military aircraft that have not been authorized and scheduled by the controlling agency are prohibited from entering active restricted airspace. However, during part of each day, some of the restricted WSMR airspace might be returned to the FAA for use by civilian aircraft under a shared-use agreement (DA 1998).

The 58 SOW currently uses uncharted routes traveling south from Kirtland AFB to access the WSMR restricted airspace to train at the Red Rio and Oscura ranges. The routes and frequency of use would remain unchanged from Kirtland AFB to WSMR and back to Kirtland AFB, so the routes are not discussed in more detail in this EA.

3.3.2 Environmental Consequences

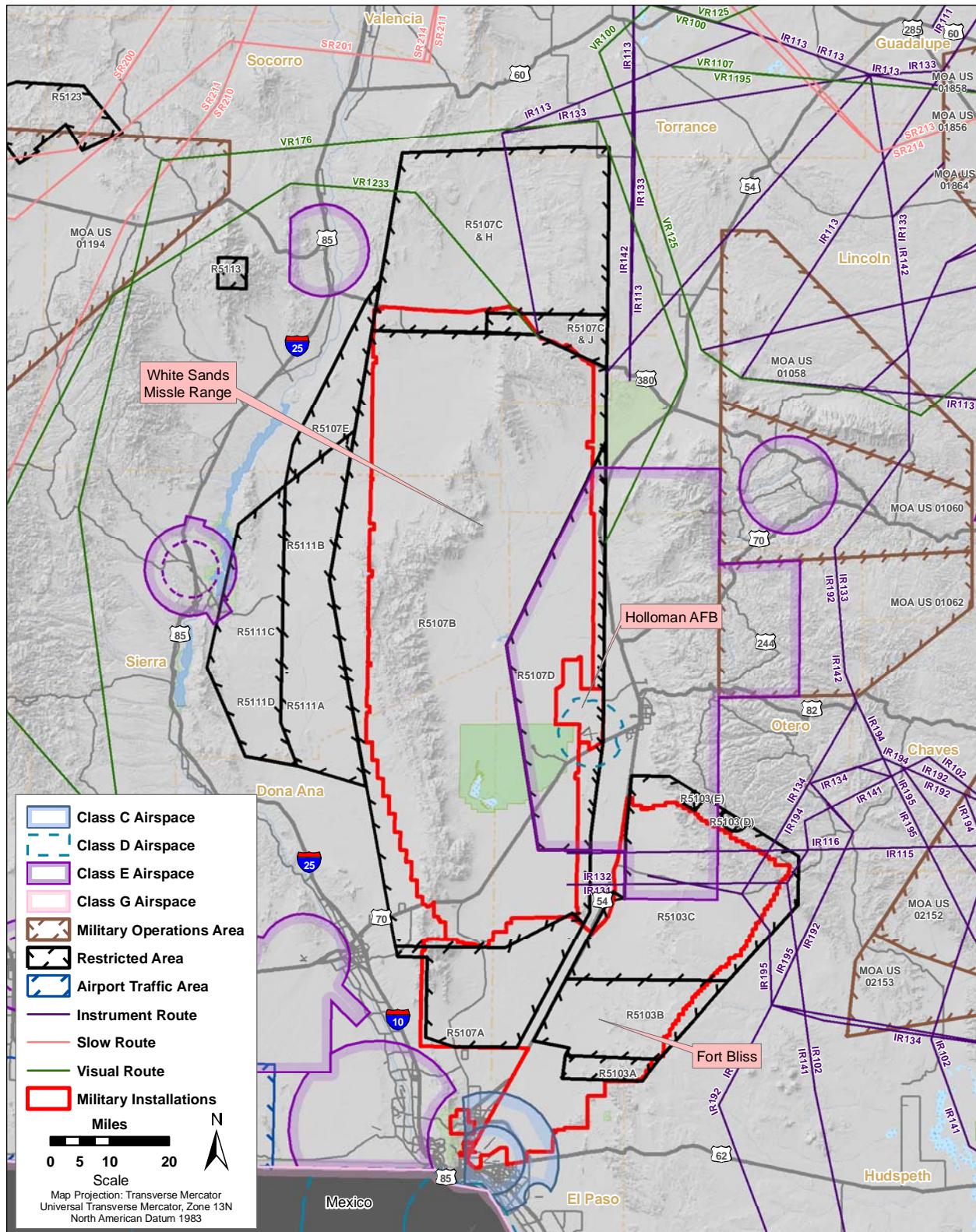
Significance Criteria

The significance of potential impacts on airspace management or air traffic control depends on the degree to which the action would affect the airspace environment. Significant impacts could occur if the results were to impose major restrictions on air commerce opportunities, significantly limit airspace access to a large number of users, or require modifications to air traffic control systems. Also included are considerations of such factors as the interaction of the proposed use of specific airspace with adjacent controlled, uncontrolled, or other military training airspace, possible impacts on other nonparticipating civil and military aircraft operations, and possible impacts on civil airports that underlie or are proximate to the airspace involved in the proposal.

Proposed Action – Fairview Site

There would be an annual total of approximately 920 operations of the HH-60G Pave Hawk and UH-1N Huey helicopters from Kirtland AFB to the proposed new target sets at WSMR to fulfill training objectives. These are the only aircraft associated with the 58 SOW for which there is a current need to conduct proficiency training in air-to-surface gunnery. These training totals are the same as currently programmed sorties for the existing air-to-surface range assets at the Red Rio and Oscura Ranges at WSMR. The aircraft would fly to WSMR from Kirtland AFB under VFR using the same uncharted routes as are currently used. To practice navigation skills en route, the aircraft fly south from Kirtland AFB on a route along the mountains east of the Rio Grande River valley until they arrive at the airspace associated with WSMR (i.e., R5107). They might also occasionally transit to WSMR via one of the helicopter aerial refueling route until arrival at the boundary of the R5107 (Reese 2007c).

Minor and localized effects on airspace would be expected. Implementation of the Proposed Action at the Fairview Site would result in minor changes to the management of local airspace at WSMR. Use of the airspace over the Fairview Site would be significantly reduced when the target sets are in operation. The vertical component of the ricochet hazard would require that minimum overflight altitudes would be at 6,365 feet AGL or higher, which would reduce the availability of airspace in the area of target sets for non-participating low and medium altitude aircraft operations. The proposed Fairview Site is approximately 20 miles west of the Oscura Range Site and approximately 25 miles southwest of the Red Rio Range Site. Use of the target sets and HLZ at the Fairview Site would require coordination with the



Sources: ESRI StreetMap USA 2005; Hillshade: USGS, Western Geographic Science Center, December 2004

Figure 3-3. Key Military and Civilian Airspace in the Vicinity of the Proposed Action

air traffic control function of the White Sands Radar Facility to ensure safe use of the airspace and prevent conflicts with other potential users of the airspace. Use of the Fairview Site is dependent on availability as determined by the WSMR Scheduling Committee. Use of the Fairview Site would not change the overall airspace for the WSMR complex, with the Fairview Site and the existing Red Rio and Oscura Ranges all being within R5107B. The 58 SOW would continue to use existing routes from Kirtland AFB to WSMR and back to Kirtland AFB. The Proposed Action would neither increase nor decrease the use of these routes.

Alternative 1 Site

Minor and localized effects on airspace would be expected. Implementation of the Proposed Action at the Alternative 1 Site would result in minor changes to the management of local airspace at WSMR. Use of the airspace over the Alternative 1 Site would be significantly reduced when the target sets are in operation. The vertical component of the ricochet hazard would require that minimum overflight altitudes would be at 6,365 feet AGL or higher, which would reduce the availability of airspace in the area of target sets for non-participating low and medium altitude aircraft operations. The proposed Alternative 1 Site is approximately 30 miles southwest of the Oscura Range Site and approximately 40 miles southwest of the Red Rio Range Site. Use of the target sets at the Alternative 1 Site would require coordination with the air traffic control function of the White Sands Radar Facility to ensure safe use of the airspace and prevent conflicts with other potential users of the airspace. Use of the Alternative 1 Site is dependent on availability as determined by the WSMR Scheduling Committee. Use of the Alternative 1 Site would not change the overall airspace for the WSMR complex, with the Alternative 1 Site and the existing Red Rio and Oscura Ranges all being within R5107B. The 58 SOW would continue to use existing routes from Kirtland AFB to the WSMR and back to Kirtland AFB. The Proposed Action would neither increase nor decrease the use of these routes.

No Action Alternative

No effects on airspace management would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.4 Noise

Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected sensitive receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists. Sound is measured in units of decibels (dB). "A-weighted" denote an adjustment of the frequency content of a noise event to represent the way in which the average human ear responds. All sound levels in this EA are A-weighted.

3.4.1 Affected Environment

The noise environment at WSMR is described in detail in the *White Sands Missile Range Range-Wide Environmental Impact Statement* (DA 1998). The launch complexes and airspace over WSMR are the primary environments containing the major noise sources on the installation. Training activities in the WSMR airspace include bomb delivery, Air Combat Command and Air National Guard air-to-air combat and supersonic flight tactics, and other military exercises. In addition, drone flights and tests of missiles, rockets, and space vehicles occur in WSMR airspace. Large areas of the airspace are used as safety buffer zones for missile and rocket firings.

The U.S. Army primarily uses the airspace over WSMR for test activities including helicopter flight operations, search and rescue, drone recovery, test debris recovery, range evacuation missions, and general helicopter flights transiting all areas. Other significant sources of noise in the operational testing areas of WSMR include missile launches, ordnance explosions, aircraft drone overflights, gun firing, general vehicle traffic, and low-altitude military jet traffic.

Noise in the vicinity of the Fairview Site and the Alternative 1 Site generally comes from overflights from military aircraft conducting tactical training flight operations, primarily by the USAF from Holloman AFB or from other USAF bases in proximity to WSMR. Aircraft familiarization, basic fighter maneuver, and air combat tactics training operations are conducted in the special-designated airspace training areas. These training areas are Mesa, Lava, Casa, and Yonder. The floor for the Mesa, Lava, and Yonder areas is 500 feet AGL, and the floor for Casa is 300 feet AGL. The Red Rio and Oscura Range training areas are used for air-to-surface gunnery training at altitudes down to ground level. Noise generated is limited to the duration of the training and overflights occurring over the area (DA 1998). Red Rio Range, Oscura Range, the proposed Fairview Site, and the Alternative 1 Site are all within the Lava training area. In 2006, the ambient noise environment was determined to be approximately 48.9 dB (USAF 2006a).

There are no towns, population centers, or other types of sensitive receptors within the vicinity of either the Fairview Site or the Alternative 1 Site. The town of Three Rivers on Highway 54 is more than 25 miles east of the Fairview Site. The town of Truth or Consequences on Interstate-25 is more than 30 miles west of the Alternative 1 Site.

3.4.2 Environmental Consequences

Significance Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). The USEPA recommends 55 dB as the sound level below which there is no reason to suspect that the general population will be at risk from any of the effects of noise (USEPA 1974).

Proposed Action – Fairview Site

Negligible short-term adverse effects on the noise environment would be expected during construction. Construction activities for the target set and HLZ would be minor and short-term, consisting of heavy machinery moving the target hulks to their chosen locations and grading, as needed, for the HLZ.

Negligible long-term adverse effects on the noise environment could occur as a result of aircraft operations at the Fairview Site. The proposed Fairview Site is approximately 15 miles from the closest boundary and in a valley, so potential noise receptors are limited to military personnel and wildlife. **Section 3.8** addresses potential noise effects on wildlife.

Table 3-1 summarizes the Sound Exposure Level (SEL) associated with the HH-60 Pave Hawk and UN-1N Huey helicopters at varying distances and altitudes. The SEL is a noise metric that represents both the intensity of a sound and its duration. The SEL metric averages the sampled sound over a 1-second period. **Table 3-1** shows the SEL at varying distances away from the targets on the ground for both the HH-60 Pave Hawk and UH-1N Huey aircraft operating at 100 feet AGL and 200 feet AGL, which represent typical altitudes that the 58 SOW could use on flights to engage the targets.

Table 3-1. SEL of HH-60 Pave Hawk and UH-1N Huey at Varying Distances and Altitudes

Aircraft Variable	Distance on Ground Away from Aircraft (feet)								
	100	200	500	1,000	2,000	4,000	8,000	16,000	25,000
Operations at 100 feet AGL									
SEL (dB) for HH-60	103.4	100.1	93.5	85.8	77.7	64.4	51.1	42.6	36.2
SEL (dB) for UH-1N	103.8	100.5	94.3	88.0	79.6	67.1	54.9	47.7	41.9
Operations at 200 feet AGL									
SEL (dB) for HH-60	100.7	98.9	93.9	88.4	81.2	71.6	57.3	42.6	36.2
SEL (dB) for UH-1N	101.1	99.4	94.8	89.6	83.1	74.3	61.1	47.7	41.9

Source: USAF 2002

Note: Data for the HH-53 were used to represent the HH-60.

From **Table 3-1** above, a noise receptor located, for example, 8,000 feet from a UH-1N Huey operating at 200 feet AGL at the target area would experience an SEL of 61.1 dB. This would represent a raw measure of the potential noise level present during operations at a set distance from the noise source.

Whereas SEL represents a single 1-second noise exposure, the noise metric for the onset rate-adjusted monthly day-night average A-weighted sound level (i.e., the L_{dnmr}) averages noise levels over time using the highest monthly level of operations. It incorporates a 10-dB penalty for events occurring between 10:00 p.m. and 7:00 a.m. and includes an additional 0- to 11-dB penalty to compensate for the startle effect of a low-altitude overflight. It is anticipated that in the immediate vicinity of the Fairview Site, the L_{dnmr} produced by operations associated with the Proposed Action (i.e., the HH-60 Pave Hawk and UH-1N Huey aircraft only) would be approximately 65.1 dB. At 3 miles from the proposed training activities, the L_{dnmr} produced by operations associated with the Proposed Action would be approximately 12.2 dB. Given that a typical urban noise environment would be at approximately 50 dB, the generation of noise associated with the Proposed Action would represent a negligible contribution to the noise environment on WSMR. Noise generation would be limited to the duration of the training events at the Fairview Site. There are no towns, population centers, or other types of sensitive noise receptors within the vicinity of the Fairview Site.

The 58 SOW currently trains at Red Rio and Oscura Ranges, which are approximately 25 miles and 20 miles, respectively, from the proposed Fairview Site. The WSMR noise environment is dominated by military testing and training activities, so the proposed gunnery and helicopter operations are acceptable

uses for this area of WSMR. Noise levels would not be expected to affect any off-installation populations or sensitive noise receptors.

Alternative 1 Site

Negligible short-term adverse effects on the noise environment would be expected from construction. Construction activities for the target set would be minor and short-term, consisting of heavy machinery moving the target hulks to their chosen locations.

Negligible long-term adverse effects on the noise environment could occur as a result of aircraft operations at the Alternative 1 Site. The Alternative 1 Site is approximately 3 miles from the closest boundary; potential noise receptors would primarily include military personnel and wildlife, but aircraft noise could be audible in the rangeland of the Abres Extension Area. **Section 3.8** addresses potential noise effects on wildlife.

Noise levels shown in **Table 3-1** for the Fairview Site would apply to the Alternative 1 Site. The WSMR noise environment is used for military testing and training activities, so the proposed gunnery and helicopter operations are acceptable uses for this area. Noise generation would be limited to the duration of the training events at the Fairview Site. There are no towns, population centers, or other types of sensitive noise receptors within the vicinity of the Fairview Site.

It is possible that livestock on adjacent ranchland, primarily consisting of sheep and cattle, could be affected by noise associated with use of the target set at the Alternative 1 Site. SEL noise levels would be approximately 47.8 dB at the installation boundary from operations at 100 feet AGL from the UH-1N Huey aircraft (used as an example because it is louder than the HH-60). Studies have shown that low-level flights at 50 to 200 feet AGL result in minimal startle reactions in many livestock species (Manci et al. 1988). Responses of sheep and cattle to noise levels of 75 dB to 109 dB from aircraft overflights have been observed to have no adverse effects on feed intake rate, growth rate, or reproduction; the animals have been observed to adapt to increased noise levels (Manci et al. 1988). Therefore, implementation of the Proposed Action at the Alternative 1 Site would not be expected to adversely affect ranchland activities off the installation due to noise effects.

No Action Alternative

No effects on noise would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.5 Air Quality

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m³), or micrograms per cubic meter (μg/m³). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

The CAA directed USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards

(NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards.

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs), which are required to be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA. USEPA has delegated the authority for ensuring compliance with the NAAQS to the New Mexico Environment Department's Air Quality Bureau (AQB). Therefore, the Proposed Action is subject to rules and regulations developed by this regulatory body. The State of New Mexico has set forth State Ambient Air Quality Standards (SAAQSS) that are as strict as, or stricter than the NAAQS (**Table 3-2**). In addition to protecting human health, the New Mexico standards are designed to protect against air pollution that injures animals and vegetation, corrodes building materials and works of art, reduces visibility, and generally diminishes the quality of life.

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now attainment, and unclassifiable means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment.

The General Conformity Rule requires that any Federal action meet the requirements of a state or Federal Implementation Plan. The rule applies only to Federal actions in nonattainment or maintenance areas and considers both direct and indirect emissions.

WSMR is in an area that is classified as in attainment for all criteria pollutants and the General Conformity rule does not apply.

Federal Prevention of Significant Deterioration regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Class I area (e.g., National Parks, National Monuments), and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of $1\text{ }\mu\text{g}/\text{m}^3$ or more (40 CFR 52.21(b)(23)(iii)). There are no Class I areas within 10 kilometers of the target area.

Table 3-2. National and New Mexico Ambient Air Quality Standards

Pollutant	NAAQS	NMAAQ	NAAQS Standard Type
CO			
8-hour Average ^a	9 ppm (10 mg/m ³)	8.7 ppm	Primary
1-hour Average ^a	35 ppm (40 mg/m ³)	13.1 ppm	Primary
NO₂			
Annual Arithmetic Mean	0.053 ppm (100 µg/m ³)	0.05 ppm	Primary and Secondary
24-hour Average	--	0.10 ppm	--
O₃			
8-hour Average ^b	0.08 ppm (157 µg/m ³)	--	Primary and Secondary
1-hour Average ^c	0.12 ppm (240 µg/m ³)	--	Primary and Secondary
Pb			
Quarterly Average	1.5 µg/m ³	--	Primary and Secondary
PM₁₀ (NAAQS) and TSP (SAAQS)			
Annual Arithmetic Mean ^d	50 µg/m ³	--	Primary and Secondary
Annual Geometric Mean	--	60 µg/m ³	--
30-day Average	--	90 µg/m ³	--
7-day Average	--	110 µg/m ³	--
24-hour Average ^a	150 µg/m ³	150 µg/m ³	Primary and Secondary
PM_{2.5}			
Annual Arithmetic Mean ^e	15 µg/m ³	--	Primary and Secondary
24-hour Average ^f	35 µg/m ³	--	Primary and Secondary
SO₂			
Annual Arithmetic Mean	0.03 ppm (80 µg/m ³)	0.02 ppm	Primary
24-hour Average ^a	0.14 ppm (365 µg/m ³)	0.10 ppm	Primary
3-hour Average ^a	0.5 ppm (1,300 µg/m ³)	--	Secondary

Source: 40 CFR Part 50 (USEPA 2007) and 20.2.3 NMAC (NMCPR 2007a)

Notes: Parenthetical values are approximate equivalent concentrations.

^a Not to be exceeded more than once per year.^b To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.^c (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1 . (b) As of June 15, 2005, USEPA revoked the 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.^d To attain this standard, the expected annual arithmetic mean PM₁₀ concentration at each monitor within an area must not exceed 50 µg/m³.^e To attain this standard, the 3-year average of the annual arithmetic mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.^f To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³.

3.5.1 Affected Environment

WSMR is within several AQCRs. The proposed Fairview Site and the Alternative 1 Site are within northeastern Sierra County, which is included in the El Paso-Las Cruces-Alamogordo Interstate AQCR, or AQCR No. 153 (40 CFR 81.82). Other areas within AQCR No. 153 are the counties of Doña Ana, Otero, Sierra, and Lincoln in New Mexico and six counties in Texas. Sierra County is in attainment for all Federal criteria pollutants. However, monitoring of ambient air quality in the vicinity of WSMR is not extensive. CO, O₃, and PM₁₀ are monitored in Las Cruces. Sampling for total suspended particulate (TSP) matter in Alamogordo was discontinued after 1988 and in Tularosa after 1986.

Due to the arid and semi-arid climate, airborne dust is a persistent problem throughout WSMR, especially during the spring (March through early May). Man-made pollution sources occur throughout WSMR but are concentrated in the Main Post area where activity levels are highest. The main continuous sources of man-made air pollution on WSMR are from vehicle emissions, including automobiles, missiles, aircraft, and debris from ground targets.

3.5.2 Environmental Consequences

Significance Criteria

The environmental consequences on local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions compared to existing conditions and ambient air quality. Specifically, the impact in NAAQS attainment areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- Exceed any Evaluation Criteria established by a SIP.

Effects on air quality in NAAQS nonattainment areas are considered significant if the net changes in project-related pollutant emissions result in any of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP.

Proposed Action – Fairview Site

Negligible or no adverse impacts would be expected from the Proposed Action. Emissions from target emplacement would be minimal and temporary. Under the Proposed Action the number of aircraft sorties and operations would remain the same, except that once into WSMR airspace the helicopters would travel slightly farther to the Fairview Site, which would be southwest of the existing Red Rio and Oscura Range areas. Emissions from helicopters using the range would occur in a remote area from a mobile source, would be quickly dispersed, and would not affect overall air quality in the region. Additionally, dust from helicopter landings in the HLZ would not be expected to create a significant impact. Any dust control activities must be coordinated with the WSMR Environmental Compliance Branch before grading begins. The Proposed Action would not result in any violation of Federal, state or local air regulations.

Alternative 1 Site

Implementation of Alternative 1 would not have any significant impacts on air quality as emissions from construction and use of the range would be the same as those described under the Proposed Action. Airborne dusts would be less of a problem compared to the Proposed Action, since no HLZ would be constructed or used.

No Action Alternative

No effects on air quality would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.6 Geological Resources

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of geology, topography, soils, and, where applicable, natural hazards and paleontology. Topography pertains to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

3.6.1 Affected Environment

WSMR is in a region typified by alternating north-south aligned mountain ranges separated by expanses of sediment-filled basins. Consistent with the regional basin and range topography, the overall landscape of WSMR consists of two large basins: the Jornada del Muerto and the Tularosa, which are separated mainly by the San Andres Mountains. Landforms include plains with low mountains, plains with high hills and local relief, open high hills, and tablelands with moderate relief. The northeast corner of WSMR extends into the Sacramento-Manzano Mountains, where major landforms include mountains, hills, plains, and scarps. The Jornada del Muerto, the location of both the Fairview Site and the Alternative 1 Site, is a closed basin. Elevation ranges from approximately 1,433 to 1,554 meters (4,700 to 5,100 feet) above MSL.

The predominant soil textures are coarse sand, sandy with clay crust, and sandy gravel. Exposed sandy soils are subject to wind erosion; exposed clay and gravelly soils are subject to wind and water erosion. The Nickel-Tencee soil association composes the majority of the proposed Fairview Site and Alternative 1 Site. This association is well-drained, moderately permeable, shallow to very deep, and formed in gravelly alluvium. Wind-induced erosion is a natural land-forming process, but accelerated erosion can be detrimental to human and natural environmental by increasing TSP in the air, encouraging invasion of resilient nonnative vegetation, decreasing habitat quality, and increasing sediment loads in receiving surface water bodies (WSMR 2002b). There are no soil series that are considered prime farmland in the vicinity of the Fairview Site or the Alternative 1 Site (BLM 2003).

3.6.2 Environmental Consequences

Significance Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Impacts on geology and soils would be significant if they would alter the lithology, stratigraphy, and geological structure that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure, or function within the environment.

Proposed Action – Fairview Site

Negligible to minor adverse effects could occur as a result of implementation of the Proposed Action at the Fairview Site. There are no important geological formations or soils found in this area. Existing soils are stable enough to allow targets to be emplaced. Exposed soils are susceptible to erosion by wind and water, though the Fairview Site is relatively flat and not as subject to water erosion.

The movement of vehicles (i.e., bulldozer) on unpaved or temporary roads for the placement of hulks could result in short-term minor disturbance of soils. Some grading for the HLZ could be required, which would also have the potential to disturb soils and could result in erosion. Adverse effects as a result of construction activities would be short-term and negligible. Best management practices (BMPs) would be employed if grading for the HLZ is needed. Any dust control activities must be coordinated with the WSMR Environmental Compliance Branch before grading begins.

Wind caused by downdraft from helicopters would have the potential to disturb soil only in the localized area surrounding the HLZ, so this would be a negligible to minor adverse effect depending on the day-to-day site conditions. Long-term operations associated with the proposed target sets would not be expected to result in adverse effects on geological resources.

Alternative 1 Site

Negligible to no effects would be expected as a result of implementation of the Proposed Action at the Alternative 1 Site. The same general soil types occur at this site, which can be susceptible to erosion if exposed. However, since this alternative would require only placement of targets, the potential for soil erosion would be short-term and localized. No HLZ would be constructed at the Alternative 1, so no short-term grading or long-term helicopter operations would occur.

No Action Alternative

No effects on geological resources would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.7 Water Resources

Water resources include groundwater, surface water, wetlands, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes. Groundwater consists of subsurface hydrologic resources. Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, and erosion protection. Wetlands are protected as a subset of “the waters of the United States” under Section 404 of the Clean Water Act. The term “waters of the United States” has a broad meaning under the Clean Water Act and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). EO 11990, *Protection of Wetlands*, requires that Federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. There are no wetlands in the project vicinity, so this resource is not discussed further in this EA.

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. In accordance with EO 11988, *Floodplain Management*, Federal agencies must determine if a proposed project would occur in a floodplain and pursue actions in the floodplain only where there is no practicable alternative. There are no delineated floodplains at WSMR, so floodplains are not discussed further in this EA.

3.7.1 Affected Environment

Groundwater on WSMR occurs in all lithologic units. In the Jornada del Muerto Basin, groundwater has been encountered in alluvial-basin deposits between 4 and 178 meters (13 to 584 feet) below ground surface. Groundwater from alluvial deposits is the main source of drinking water, though water from some wells must be desalinated before drinking.

Most streams, lakes, ponds, and rainwater catchments that occur at WSMR are ephemeral and highly dependent on snowmelt and precipitation events. Generally, WSMR experiences low rainfall, low humidity, high temperatures, and high water infiltration rates in the arid soils. During periods of excessive rainfall, such as the occasional intense summertime thunderstorm, surface water flows overland and can accumulate in natural or man-made depressions. Topographic maps of the Fairview and Alternative 1 Sites indicate there are small, unnamed ephemeral surface water channels present at both locations.

3.7.2 Environmental Consequences

Significance Criteria

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. The Proposed Action would have adverse effects on water resources if it were to do one or more of the following:

- Reduce water availability or supply to existing users
- Overdraft groundwater basins

- Exceed safe annual yield of water supply sources
- Affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The effect of flood hazards on a proposed action is important if such an action is in an area with a high probability of flooding.

Proposed Action – Fairview Site

No effects on water resources would be expected as a result of implementation of the Proposed Action at the Fairview Site. There are some small channels in the vicinity of the proposed target array at the Fairview Site, but these channels rarely convey water in the dry WSMR environment. When targets are being placed, all ephemeral channels would be avoided. Minor ground-disturbing activities could occur during placement of the hulks, minor grading for the HLZ (if required), and ongoing helicopter operations when landing at the HLZ. However, given the absence of surface water bodies in the vicinity of the Fairview Site, the relatively level terrain, and the minor and localized nature of any potential soil erosion (as discussed in **Section 3.6**), no effects would be expected. Furthermore, no hazardous materials or wastes would be stored at the Fairview Site that could introduce potential surface water and groundwater contaminants.

Alternative 1 Site

No effects on water resources would be expected. The affected environment for water resources and potential environmental consequences associated with the Alternative 1 Site is essentially the same as was described for the Fairview Site.

No Action Alternative

No effects on water resources would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.8 Biological Resources

Biological resources include native or naturalized plants and animals and the habitats in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species, and designated or proposed critical habitat; species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

Under the Endangered Species Act (ESA) (16 United States Code [U.S.C.] § 1536), an “endangered species” is defined as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. Although candidate species receive no statutory protection under the ESA, the U.S. Fish and Wildlife Service (USFWS) advises government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA in the future.

The Migratory Bird Treaty Act makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported,

imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The Bald and Golden Eagle Protection Act prohibits any form of possession or taking of both bald eagles and golden eagles.

3.8.1 Affected Environment

Vegetation and Wildlife. The Fairview Site occurs in a grassland community between two mountains. Grass species occurring in the area would include blue grama (*Bouteloua gracilis*), hairy grama (*Bouteloua hirsuta*), and side-oats grama (*B. curtipendula*). Shrubs including soaptree yucca (*Yucca elata*) and winterfat (*Krascheninnikovia lanata*) can also occur but are not dominate (WSMR 2002b). Typical wildlife inhabiting the area would include a variety of songbirds, raptors, small mammals (including rodents and rabbits), bats, reptiles, toads, deer, oryx, coyote, bobcat, and mountain lion (Griffin 2007).

The Alternative 1 Site is dominated by desert scrub and shrublands. Dominant shrub species include sandsage brush (*Artemisia filifolia*), creosotebush (*Larrea tridentata*), and tarbush (*Flarensia cernua*). Grasses include black grama (*B. eriopoda*), sand dropseed (*Sporobolus cryptandrus*), and bush muhly (*Muhlenbergia porteri*) (WSMR 2002b). Typical wildlife inhabiting the area would be essentially the same as for the Fairview Site, possibly with fewer grassland species (e.g., grassland sparrows) (Griffin 2007).

Protected and Sensitive Species. Species listed as federally threatened or endangered are protected under the ESA. In New Mexico, wildlife listed as state-threatened or state-endangered are protected under the Wildlife Conservation Act (NMSA 1978 § 17-2-37 et seq.) and plants listed as state-endangered are protected under the Endangered Plant Species Act (NMSA 1978 § 75-6-1). **Table 3-3** contains a list of Federal- and state-listed protected species that have been documented as occurring or have the potential to occur in Sierra County. The lists of Federal- and state-listed species and other rare species were compared with those that are known to occur or have the potential to occur in the vicinity of the Fairview Site and the Alternative 1 Site, based on the installation's *Integrated Natural Resources Management Plan* (WSMR 2002b). The following text discusses those threatened or endangered species that have been identified as potentially occurring in the vicinity of either site.

- *Northern aplomado falcon (federally and state-endangered).* Verified accounts of this species have been recorded in Sierra County and surrounding counties (NMDG&F 2007). The New Mexico population of northern aplomado falcons has been designated as a Nonessential Experimental Population (50 CFR Part 17). A transient juvenile was observed near Harriet Site, north of the Fairview and Alternative 1 Sites, on August 27, 2005 (Winnett 2007). In 2006, the USFWS prepared an *EA for the Reestablishment of the Northern Aplomado Falcon in New Mexico and Arizona* (USFWS 2006). Reintroductions of an experimental population of the northern aplomado falcon began in August 2006 on WSMR as well as on lands managed by the BLM and the state of New Mexico (DOD and USFWS 2007, Winnett 2007). WSMR has prepared an Endangered Species Management Plan to manage military missions while supporting the recovery of the northern aplomado falcon. An aplomado falcon habitat model (Young et al. 2005) indicates that the grasslands of the Fairview Site provide just a small amount of moderately suitable habitat, so the falcon would not be expected to inhabit this site. The Alternative 1 Site contains some moderately suitable habitat and some highly suitable falcon habitat and is more contiguous with suitable habitat throughout Stallion Range (Young et al. 2005).

Table 3-3. Protected Species Potentially Occurring at WSMR in Sierra County

Common Name	Scientific Name	Federal Status ^a	State Status ^b	Documented Occurrence at WSMR ^c	General Habitat Preferences	Likelihood at Fairview or Alternative 1 Sites
Birds						
Aplomado falcon (Northern)	<i>Falco femoralis septentrionalis</i>	E	E	Yes, Occasional resident	Open grasslands and desert	Possible
Baird's sparrow	<i>Ammodramus bairdii</i>	SC	T	Yes, Transient	Grasslands and weedy fields	Possible
Bald eagle ^d	<i>Haliaeetus leucocephalus</i>	BG ^e	T	Yes, Transient	Large bodies of water, occasionally prairie dog colonies in winter	Unlikely
Bell's vireo	<i>Vireo bellii</i>	SC	T	Yes, Summer resident	Moist woodlands, bottomlands, mesquite	No
Broad-billed hummingbird	<i>Cynanthus latirostris</i>	--	T	Yes, Transient	Desert canyons, low mountain woodlands	Unlikely
Common black-hawk	<i>Buteogallus anthracinus</i>	--	T	Possible	Wetlands and waterways	Unlikely
Common ground-dove	<i>Columbina passerine</i>	--	E	Possible	Brushy rangelands and open ground	Unlikely
Costa's hummingbird	<i>Calypte costae</i>	--	T	Yes, Transient	Desert washes and dry chaparral	Unlikely
Elegant trogon	<i>Trogon elegans</i>	--	E	Possible	Highly varied, prefers riparian woodlands	No
Golden eagle	<i>Aquila chrysaetos</i>	BG ^e	--	Yes, Resident	Prefers open desert or mountainous terrain	Possible
Gray vireo	<i>Vireo vicinior</i>	--	T	Yes, Summer resident	Juniper woodlands and canyonlands	Unlikely
Least tern	<i>Sterna antillarum</i>	E	E	Yes, Vagrant	Beaches and sandbars on coasts, rivers, and lakes	No
Peregrine falcon (American and Arctic)	<i>Falco peregrinus</i>	SC	T	Yes	Open bodies of water and wetlands with cliffs nearby	Possible
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	E	Possible	Riparian	No

Common Name	Scientific Name	Federal Status ^a	State Status ^b	Documented Occurrence at WSMR ^c	General Habitat Preferences	Likelihood at Fairview or Alternative 1 Sites
Varied bunting	<i>Passerina versicolor</i>	--	T	Yes, Summer resident	Thorny thickets in washes and canyons, often near water	Unlikely
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	SC	--	Yes, Resident	Grasslands, shrublands, and prairie dog colonies	Possible
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	--	Yes, Summer resident	Riparian vegetation	No
Fish						
White Sands pupfish	<i>Cyprinodon tularosa</i>	SC	T	Yes, Resident	Small steams and pools	No
Mammals						
Desert bighorn sheep	<i>Ovis canadensis mexicana</i>	--	E	Yes, Resident	Rugged mountains and canyons	Possible
Mexican gray wolf	<i>Canis lupus baileyi</i>	E	E	Extirpated	Ponderosa pine, pinyon-juniper woodlands, oak woodlands, grasslands, desert wash	No
Organ Mountains Colorado chipmunk	<i>Eutamias quadrivittatus australis</i> or <i>Neotamias quadrivittatus australis</i>	SC	T	Yes	Organ and Oscura Mountains—ponderosa pine, pinyon-juniper woodland, montane scrub-shrub, rock outcrops	No
Spotted bat	<i>Euderma maculatum</i>	--	T	Yes, Transient	Mountainous and canyon terrain, roost in rock crevices	Unlikely
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SC	--	Yes, Resident	Desert scrub and woodlands, roost in mines and caves	Possible
Southern plains woodrat	<i>Neotoma micropus leucophaea</i>	SC	--	Yes	Semi-arid brushland, low valleys, and plains	Possible

Common Name	Scientific Name	Federal Status ^a	State Status ^b	Documented Occurrence at WSMR ^c	General Habitat Preferences	Likelihood at Fairview or Alternative 1 Sites
Plants						
Night-blooming cereus	<i>Peniocereus greggi</i>	--	E	Yes	Gravelly soils on creosotebush scrub	Possible
Todsen's pennyroyal	<i>Hedeoma todsenii</i>	E	E	Yes, Critical Habitat designated in the San Andres Mountains	Gypseous-limestone soils, pinyon-juniper woodland	No

Sources:

^a USFWS 2007. Federally threatened (T) and endangered (E) species are protected under the Endangered Species Act (16 U.S.C. 1531 et seq). Federal Species of Concern (SC) are provided for planning purposes only.

^b NMDG&F 2006; NMDG&F 2007; 19.21.3 NMAC (NMCPR 2007b); and USDA, NRCS 2007. Wildlife are protected under the Wildlife Conservation Act (NMSA 1978 § 17-2-37 et seq) and are designated as threatened (T) or endangered (E). Plants are protected under the Endangered Plant Species Act (NMSA 1978 § 75-6-1) and are designated as endangered (E). The Army provides the same protection to state-listed species as federally listed species, whenever possible.

^c WSMR 2002b, Tables 6.5 through 6.14

Notes:

^d As of August 8, 2007, the bald eagle is no longer a federally threatened species (50 CFR Part 17).

^e Bald and golden eagles are afforded special protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq)

- *Baird's sparrow (Federal species of concern and state-threatened)*. This species has been observed occupying the grasslands of the Jornada Plains of WSMR on four occasions in Socorro County (WSMR 2002b). The grassland habitat of the Fairview and Alternative 1 Sites could provide a suitable wintering area for this species during migration.
- *Peregrine falcon (Federal species of concern and state-threatened)*. This species has been observed on WSMR at water locations and in the Organ Mountains and Tularosa Basin. It is suspected that this species might breed in the San Andres and Oscura mountains. The peregrine falcon could pass through both the proposed Fairview and Alternative 1 Sites on its way to or from more suitable foraging habitat (Griffin 2007).
- *Desert bighorn sheep (state-endangered)*. This species inhabits the San Andres Mountains on WSMR. One ram was sited on Capital Peak, which is approximately 5 miles southeast of the proposed Fairview Site, and another ram was sited in Lee Canyon, which is further south (Rodden 2007). The top and east-facing slope of the Fairview Mountains would provide good habitat and escape terrain for the desert bighorn sheep, but their occurrence would be rare (Rodden 2007).
- *Todsen's pennyroyal (federally and state-endangered species)*. This plant species has an extremely limited range and is endemic to New Mexico. The San Andres and Sacramento mountains contain the only known populations (WSMR 2002b). It is restricted to gypseous-limestone soils and generally found on north-facing slopes in pinyon-juniper habitat. Critical habitat for the Todsen's pennyroyal has been designated, but the proposed Fairview and Alternative 1 Sites are not in or near designated critical habitat or any other potential habitat.
- *Night-blooming cereus (state-endangered plant species)*. This plant species would more likely be found south of the proposed Fairview and Alternative 1 Sites, but it is known to occur within the Nickel-Tencce soil association with creosote as a nurse plant (Nethers 2007).

Table 3-3 also identifies three Federal species of concern with the potential to occur near the proposed Fairview and Alternative 1 Sites. While there is no legal protection conferred in this designation, WSMR attempts to protect rare and sensitive species that could become listed species in the future. The western burrowing owl is a grassland species that uses abandoned burrows for nesting, especially those of prairie dogs; this species breeds on WSMR and has the potential to occur in the project vicinity (WSMR 2002b). Townsend's big-eared bat, as well as other rare but not listed bat species (not included in **Table 3-3**) might occur in the project vicinity if a roost is located nearby. The southern plains woodrat is found in semiarid brushlands and could also occur in the proposed project vicinity. Golden eagles, which are protected under the Bald and Golden Eagle Protection Act, are year-round residents of WSMR though considered uncommon. They are confirmed to breed at the installation, and there is also a relatively high wintering population (WSMR 2002b, Griffin 2007).

3.8.2 Environmental Consequences

Significance Criteria

The significance of effects on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to proposed activities, and (4) the duration of ecological effects. A habitat perspective is used to provide a framework for analysis of general classes of effects (i.e., removal of critical habitat, noise, human disturbance).

Ground disturbance and noise associated with construction activities might directly or indirectly cause potential effects on biological resources. Direct effects from ground disturbance were evaluated by

identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats might be effects associated with ground-disturbing activities.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate effects, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total available habitat within the region, type of stressors involved, and magnitude of the effects.

As a requirement under the ESA, Federal agencies are required to provide documentation that ensures that agency actions will not adversely affect the existence of any Federal threatened or endangered species. The ESA requires that all Federal agencies avoid “taking” threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with USFWS concurrence on a determination of the risk of jeopardy from a Federal agency project.

Proposed Action – Fairview Site

Vegetation and Wildlife. Short-term adverse effects on vegetation could occur as a result of implementation of the Proposed Action at the Fairview Site. Placement of targets would result in minor disturbance to vegetation. Vegetation losses at the Fairview Site from grading for the HLZ and placement of targets would be less than 1 acre, which would not be a significant impact. Animals inhabiting the area would also not be significantly impacted as a result of the loss of vegetation because similar habitat is available surrounding the Fairview Site. Resident animal populations on WSMR are generally adjusted to noise associated with military overflights and training activities; numerous studies have shown that animals disturbed by noise go back to previous behaviors once the noise has ceased (NATO 2000). Prior to conducting military training activities at the Fairview Site, pilots would be required to take one pass over the site to ensure that wildlife are not present. If wildlife are present, such as deer or oryx, training would be postponed until the area is cleared. Mortality of less-mobile species could occur but would not be expected to affect population numbers. Munitions that contain lead would be used on the range; refer to **Section 3.12.2** regarding pollution prevention at military ranges. It is anticipated that ranges would be maintained and that lead levels would not adversely affect wildlife. Therefore, no significant adverse effects would be expected on wildlife populations.

Protected and Sensitive Species. Implementation of the Proposed Action at the Fairview Site would not be expected to adversely affect a Federal- or state-listed species. Northern aplomado falcon, peregrine falcon, and golden eagle have been observed at the installation and could occur. WSMR has a Northern Aplomado Falcon Endangered Species Management Plan in place, and the 58 SOW would adhere to this plan to ensure that the potential for adverse effects is minimized. The proposed Fairview Site offers only a small amount of what is considered moderately suitable habitat for the aplomado falcon (Young et al. 2005), so this species is not likely to inhabit the site.

Prior to any ground-disturbance, visual inspection of the site should occur to ensure no rare or sensitive plant species occur (e.g., night-blooming cereus). WSMR Environmental Services would be on site during target placement and grading HLZ grading (if needed) to ensure compliance with the laws that protect these species.

The western burrowing owl is the only sensitive species (Federal species of concern) that might use the area around the Fairview Site for breeding. Prior to any grading activities (if needed) for the HLZ,

burrowing owl surveys would be done to ensure that the area does not contain any owls or burrows. In the event that burrowing owls are found, the owls would be relocated or grading would be delayed until the nesting and brood-rearing season (i.e., March through October) is over.

Prior to conducting military training activities at the Fairview Site, pilots would be required to take one pass over the site to ensure that wildlife, including aplomado falcon, golden eagle, desert bighorn sheep, or any other federally or state-protected species, are not present. If wildlife is present, training would be postponed until the area is cleared. WSMR Environmental Services would be contacted if a Federal- or state-protected animal species is observed to ensure compliance with the laws that protect these species.

Migratory bird species could occur in the vicinity of the Fairview Site. However, there would be no intentional taking of migratory birds as a result of training activities. The Proposed Action would be considered a military readiness activity consistent with the provisions of the *Final Rule: Migratory Bird Permits; Take of Migratory Birds by the Armed Forces* (72 *Federal Register* 8931). The Proposed Action does not have the potential to result in significant adverse effects on the population of migratory bird species. In the event that a bird nest is found in a target, WSMR Environmental Services should be contacted to determine if the nest can be removed (i.e., not a fully constructed nest), or if a permit is required to remove the nest.

The USFWS and NMDG&F were provided an opportunity to review the Draft EA. One comment from the USFWS was received (see **Appendix B**) and that comment is addressed in this Final EA.

Alternative 1 Site

Implementation of the Proposed Action at the Alternative 1 Site would result in environmental effects essentially the same as those described for the Fairview Site but potentially slightly more adverse. As discussed in **Section 3.8.1**, the Alternative 1 Site is considered moderately to highly suitable habitat for the aplomado falcon (Young et al. 2005). Habitat for the aplomado falcon is more suitable in the Stallion Range area, so it is not likely that aplomado falcons would inhabit the site though individuals could traverse the area. The measures discussed under the Proposed Action to minimize potentially adverse effects on wildlife would apply to the Alternative 1 Site.

No Action Alternative

No effects on biological resources would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.9 Cultural Resources

“Cultural resources” is an umbrella term for many heritage-related resources. The National Historic Preservation Act (NHPA) focuses on “historic properties,” specifically, prehistoric or historic district, site, building, or structure included in, or eligible for, the National Register of Historic Places (NRHP), including related artifacts, records, and material remains. Traditional, religious, and cultural properties holding significance for Native American tribes, and Native Alaskan and Native Hawaiian organizations could also be considered NRHP-eligible. Depending on the condition, such resources might provide insight into living conditions in previous civilizations or might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). Under Section 110 of the NHPA, Federal agencies are required to locate and inventory all resources under their purview that are recommended as eligible for inclusion in the NRHP on owned, leased, or managed property. In accordance with EO 12372, *Intergovernmental Review of Federal Programs*, determinations regarding the potential effects of an undertaking on historic properties are presented to the State Historic Preservation Office (SHPO), federally recognized Native American tribes, and other interested parties.

For this Proposed Action, the Area of Potential Effect (APE) is limited to the access corridor to and from the target sets for both sites, each target location with a half-acre buffer around each target site, and the HLZ landing zone at the Fairview Site.

3.9.1 Affected Environment

Archaeological artifacts have been uncovered throughout south-central New Mexico, including WSMR, providing insight into the chronology and culture dating back as much as 12,000 years ago. Historical resources include evidence of the Indian wars, stage lines, cattle and sheep ranching, mining operations, and railways (WSMR 2002b).

There are old ranches, ranch houses, mines, and prehistoric sites in the vicinity surrounding the Fairview and Alternative 1 Sites. Gilliland Ranch Headquarters is north and Cain Ranch Headquarters is west of the Alternative 1 Site; these sites are not eligible for the NRHP. The Trinity National Historic Site, which is where the world's first atomic device was detonated, is approximately 12 miles north of the Fairview Site. The Trinity Site is listed on the NRHP, but it is well outside the APE for both sites for this Proposed Action and is not discussed in detail.

Military missions have the potential to damage or degrade WSMR's cultural and historical resources. A cultural resources survey of the Fairview Site was conducted in October 2007 to determine the potential for cultural resources in the target areas of the site. Some minor relocations of candidate locations for target assets have been implemented as a result of the preliminary results of this survey activity to ensure protection of possible resources identified during the field work for the survey. The results contained in the survey report are coordinated with the New Mexico SHPO.

In accordance with EO 12372, the Mescalero Apache Tribe and the New Mexico SHPO were provided an opportunity to review and comment on the Draft EA. No comments or objections on the EA were received. If any potential cultural issues are identified, the U.S. Army and the USAF would consult to resolve conflicts prior to implementation of the Proposed Action at either site.

3.9.2 Environmental Consequences

Significance Criteria

Adverse effects on cultural resources can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or that alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of Federal agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

Proposed Action – Fairview Site

The cultural resources survey report that has been prepared addresses the access corridor to and from the target sets from the existing road. Each target location was surveyed with a half-acre buffer surrounding the proposed target sets. The proposed HLZ was also surveyed. To mitigate potential impacts, some minor relocations of candidate locations for target assets were implemented based on the results of the survey.

The Proposed Action would have no effect on the Trinity National Historic Site since it is approximately 12 miles north of the APE. Therefore, implementation of the Proposed Action at the Fairview Site would not be expected to have any effects on cultural resources.

Alternative 1 Site

A cultural resources survey will be done for the access corridor to and from the target sets from the existing road should the Alternative 1 Site be selected. Each target location would be surveyed with a half-acre buffer surrounding the proposed target sets. Should an eligible cultural resource site be found, either the access corridor or the target site would be moved to avoid the resource.

The Proposed Action would have no effect on the Trinity National Historic Site since it is approximately 25 miles northeast of the APE. Therefore, implementation of the Proposed Action at the Alternative 1 Site would not be expected to have any effects on cultural resources.

No Action Alternative

No effects on cultural resources would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.10 Socioeconomic Resources and Environmental Justice

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends. There are no Federal regulations specifically pertaining to socioeconomics, but there are two EOs that are relevant for specific socioeconomic groups, as discussed below.

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued on February 11, 1994. This EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

EO 13045, *Protection of Children From Environmental Health Risks and Safety Risks*, was issued on April 23, 1997. This EO was created to ensure that Federal policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks and safety risks. Adverse effects on children would be considered disproportionate because children's bodily systems are still developing, children's size and weight can diminish their protection from safety features, and children are less able to protect themselves and are more susceptible to accidents.

3.10.1 Affected Environment

WSMR is a very large and relatively undeveloped tract of land. It is primarily used as military range with some other government and private uses. The Main Post area, which is where the majority of military personnel and family members are, is approximately 50 miles south from the Fairview and Alternative 1 Sites. Private ranchers and farmers live adjacent to or a short distance from WSMR. Rural developers are also building and expanding housing development in the region. The scope of this Proposed Action limits the socioeconomic region of influence to WSMR, and primarily the Fairview Site and Alternative 1 Site. The immediate vicinity of these sites is undeveloped and uninhabited.

3.10.2 Environmental Consequences

Significance Criteria

Construction expenditure impacts are assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates 10 employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. The Proposed Action could have a major effect with respect to the socioeconomic conditions in the surrounding Region of Influence (ROI) if any of the following were to occur:

- Change in the local business volume, employment, personal income, or population that exceeds the ROI's historical annual change
- Adverse effects on social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates
- Disproportionate impact on minority populations or low-income populations or children.

Proposed Action – Fairview Site

No effects on socioeconomic resources would be expected. It is anticipated that military personnel would construct the target sets and the HLZ. If outside construction contractors are required, their services would be short-term and minor with no long-lasting socioeconomic benefits. Operations associated with the proposed target set would not increase manpower at WSMR, so no long-term effects on payroll, employment, or housing would be expected.

No environmental justice impacts, as set forth in EO 12898, or impacts on children, as set forth in EO 13045, would be expected. The proposed target set would be expected to result in ground disturbance of less than 1 acre of land, located entirely within, and many miles from, the boundary of WSMR. No significant effects have been identified for any resource area. The nearest residential populations are located miles beyond the WSMR boundary. Because air emissions and noise from operations at the site would not impact any residential population or workers, and these effects when present would be short-term and temporary in the immediate vicinity of the target set, the Proposed Action has no potential to

result in adverse effects on off-installation populations. Therefore, the Proposed Action would not disproportionately affect any minority or low-income populations. Children would not be allowed at the proposed Fairview Site, and access to WSMR is limited and controlled. Therefore, the Proposed Action would not disproportionately affect children.

Alternative 1 Site

Although the Alternative 1 Site is closer to the WSMR boundary, the effects on socioeconomic resources and environmental justice issues would be expected to be similar to those associated with the Fairview Site alternative. This is because the ROI for the Alternative 1 Site is essentially the same as for the Fairview Site, with both sites being within the installation boundary and miles from the nearest population centers.

No Action Alternative

No effects on socioeconomic resources or environmental justice would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.11 Infrastructure

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. Infrastructure components include transportation, utilities (water supply, sanitary sewage, industrial wastewater, storm water, electrical power, natural gas, and communications), and solid waste management.

3.11.1 Affected Environment

WSMR is supported by extensive infrastructure that includes a central administrative and technical complex; roads; air transport facilities; a railhead; and systems for water distribution, sanitary waste, natural gas distribution, solid waste landfills, electric power, and communications networks. WSMR also supports a variety of highly specialized test sites and facilities. Infrastructure and facilities have evolved over a 50-year period and are being constantly improved and expanded to accommodate the military test and evaluation mission.

3.11.2 Environmental Consequences

Significance Criteria

Effects on infrastructure are evaluated for their potential to disrupt or improve existing levels of service and create additional needs for transportation patterns, energy (natural gas and electric), potable water, sanitary sewer systems, storm water systems, and solid waste management. Impacts might arise from physical changes to traffic circulation, construction activities, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes; and energy needs created by either direct or indirect workforce and population changes related to installation activities. An impact would be significant if implementation of the Proposed Action resulted in the following effects on transportation,

electrical power, natural gas, potable water, sanitary sewer/wastewater, storm water, central heating, communications, fuel, and solid waste systems:

- Exceeded capacity of a utility
- A long-term interruption of a utility
- A violation of a permit condition
- A violation of an approved plan for a utility.

Proposed Action – Fairview Site

No effects on infrastructure would be expected. The proposed Fairview Site is remote. As discussed in **Section 3.2**, the surface danger zones associated with the Proposed Action could dictate certain road closures when ranges are active. During training activities, roads that are within the surface danger zone would be off-limits to through traffic. Roads in the vicinity of the Fairview Site are remote and not heavily used. Initial target placement and subsequent training operations associated with the proposed target sets would not require consumption or use of potable water, wastewater, electricity, sanitary sewer, communications, or solid waste disposal.

Alternative 1 Site

No effects on infrastructure would be expected. Environmental conditions and proposed operations for the Alternative 1 Site would be essentially the same as for the Fairview Site.

No Action Alternative

No effects on infrastructure would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.12 Hazardous Materials and Waste Management

Hazardous materials are defined by 49 CFR 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions” in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

Hazardous wastes are defined by the Resource Conservation and Recovery Act at 42 U.S.C. §6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR Part 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps.

For the USAF, Air Force Policy Directive 32-70, *Environmental Quality*, and the AFI 32-7000 series incorporate the requirements of all Federal regulations, and other AFIs and DOD Directives for the management of hazardous materials, hazardous wastes, and special hazards. Similarly, the U.S. Army has AR 200-1, *Environmental Protection and Enhancement*, and other ARs that establish goals, guidelines, and protocols.

3.12.1 Affected Environment

No hazardous materials or wastes are known to have been stored or generated at either the Fairview Site or the Alternative 1 Site. Both sites are currently undeveloped. As discussed in **Section 3.2.2**, since all of WSMR is considered an active range, UXO hazards could exist. Potential effects from UXO are analyzed in **Section 3.2**.

3.12.2 Environmental Consequences

Significance Criteria

Impacts on hazardous materials management would be considered significant if the Federal action resulted in noncompliance with applicable Federal and state regulations, or increased the amounts generated or procured beyond current waste management procedures and capacities. Impacts could also be considered significant if the Federal action disturbed (or created) contaminated sites resulting in adverse effects on human health or the environment.

Proposed Action – Fairview Site

Negligible to no short-term effects would be expected. It is anticipated that each hulk would have approximately 1 gallon of fuel to aid in target placement. Following final target placement, the remaining fuel, hydraulic fluids, or other potentially hazardous materials would be drained using BMPs to reduce the likelihood of a spill. The transfer and removal of approximately 10 gallons of fuel and minimal quantities of other potentially hazardous materials would have little potential for adverse effects.

Minor long-term adverse effects could occur. Lead ammunition would be used at the target set, and lead is considered a hazardous material. However, all of WSMR is designated as an active range and the use of lead ammunition is allowable. In accordance with DOD Directive 4715.11, the proposed Fairview Site would be maintained for sustainable and safe operations. The Red Rio and Oscura Ranges are managed in accordance with AFI 13-212; there are annual and quarterly clean-ups of those ranges to prevent environmental degradation as a result of using lead munitions. It is anticipated that the proposed target array at the Fairview Site would be cleaned up in a similar way and incorporate pollution prevention practices as applicable. Range maintenance activities would reduce the potential for soil and groundwater contamination and associated adverse effects on human safety and wildlife. Should the target set close in the future, additional clean up measures could be required. The environmental effects would not be significant.

Alternative 1 Site

Environmental consequences at Alternative 1 would be similar to those described for the Fairview Site. Lead ammunition could accumulate around each target site, but this is allowable across WSMR. As described for the Fairview Site, annual and quarterly clean up and implementation of pollution prevention practices would minimize the potential for adverse environmental or health effects.

No Action Alternative

No effects on hazardous materials and waste management would be expected at either the Fairview Site or the Alternative 1 Site as a result of implementing the No Action Alternative. The 58 SOW would continue to use the Red Rio and Oscura Ranges, and no changes would be expected to existing conditions at these ranges or to the associated impacts from current operations.

3.13 Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Recent CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involves defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions (CEQ 1997).

Given the large geographic area of WSMR and the number of tenant organizations, it is not reasonable or necessary to identify every project that has or could occur at WSMR because not all projects have the potential for cumulative effects. WSMR is the largest active range in the United States that is entirely over land. The desert environment at WSMR is similar to the environments encountered by current military operations in Iraq and Afghanistan. As a result, WSMR is constantly in use for test and training missions. This use is consistent with DOD policy that military installations must be ready to respond to constantly changing threats to American interests throughout the world. To assess the military and civilian supported activities that occur at the range, WSMR has prepared environmental documentation for many years addressing the activities that occur at the installation each year. NEPA documentation from WSMR and from surrounding USAF installations was used to identify past actions and reasonably foreseeable current and future actions that could have the potential to result in cumulative effects, with an emphasis on those projects near the proposed Fairview Site and Alternative 1 Site.

Projects Identified for Potential Cumulative Effects

Personnel at WSMR, Kirtland AFB, and Holloman AFB aided in identifying the projects below for potential cumulative effects.

Ongoing and Future Testing Activities at WSMR. The primary mission of WSMR is the operation of a National Range in accordance with direction from the U.S. Army Test and Evaluation Command, which includes the conduct of instrumentation research and development and the development of systems used by the Armed Forces, NASA, and Defense Threat Reduction Agency. The U.S. Army prepared a *White Sands Missile Range, Range-wide Environmental Impact Statement* (the “Range-wide EIS”) in 1998 (DA 1998). The Range-wide EIS assessed the long-term operation of WSMR with the adoption of mitigation measures for the continuation of existing programs and the future testing of scientific, military, and commercial systems for the next 10 years. Testing activities at WSMR encompass a variety of ever-changing programs and occur in many places on the range. Examples of general testing activities include air-to-air/surface missile programs; surface-to-air missile programs; surface-to-surface missile and other weapons systems launch programs; aircraft dispenser and bomb-drop programs; target systems; meteorological and upper atmospheric probes; NASA and Space Program support; equipment, component, or subcomponent programs; high-energy laser programs; research and development programs; and other special task missions.

Three test programs were identified as having the potential to result in cumulative effects because of their proximity to the Proposed Action location: the Joint Directed Energy Test Site (JDETS), the Aerial Cable, and the Acoustic Research Complex (ARC). JDETS, which would be near the Stallion Range area, would develop and test high-power and broadband-directed energy jamming and negation systems for defeating improvised explosive devices. The Aerial Cable is a 3-mile long cable, suspended between the Mockingbird Mountain and Oscura Mountain peaks, that is used to test bombs, sensors, missiles, submunitions, prototype aircraft electronics, target and clutter characterizations, and electronic countermeasures and warning devices. The ARC consists of towers that are used in acoustical monitoring. None of these projects would occur within either of the areas considered for the proposed Fairview Site or the Alternative 1 Site.

Construction of the proposed target array would not be expected to affect the three identified testing programs or other test projects at WSMR because test missions have scheduling priority over training missions. In the event that testing activities would be occurring at the Aerial Cable, for example, that could be affected by noise or vibrations of aircraft operations, then no training activities at the proposed target array would occur until given clearance. Additionally, pilots conducting training missions are always made aware of potential vertical hazards, such as the Aerial Cable or ARC towers, and would avoid any such hazards. Training activities associated with the Proposed Action are similar to other types of helicopter training that are ongoing at WSMR. Potential impacts on test activities are not considered further in the cumulative effects analysis.

Construction of Training Ranges at WSMR. Headquarters U.S. Army Garrison at WSMR, the New Mexico National Guard, and the U.S. Army Environmental Center prepared the *Final Environmental Assessment for Proposed Training Ranges at White Sands Missile Range, New Mexico* (the “Proposed Training Ranges EA”) in July 2006 (WSMR, NMNG, and USAEC 2006). This EA analyzed the construction of six training ranges at Warrior Training Range Complex North, expansion of Warrior Training Lanes South, and renovation of facilities at Stallion Range and Main Post to support the establishment of a Warrior Transition Course. The proposed Warrior Training Range Complex North is approximately 24 miles and 28 miles from the proposed Fairview Site and Alternative 1 Site, respectively. The proposed Warrior Training Lanes South and Main Post are approximately 62 miles from the proposed Fairview Site and 58 miles from the Alternative 1 Site. Given the distance and the nature of the potential environmental effects identified in the Proposed Training Ranges EA (WSMR, NMNG, and USAEC 2006), this project would not be expected to result in any cumulative effects associated with construction of a target set at either the Fairview Site or the Alternative 1 Site. The construction of training ranges for the Warrior Training Complex is not considered further in the cumulative effects analysis.

Drawdown of the F-117A and T-38A and Beddown of the F-22A at Holloman AFB. The USAF proposes to transform the 49 FW at Holloman AFB by replacing the retiring F-117A Nighthawk and T-38A Talon aircraft with the F-22A Raptor aircraft. The *Final Environmental Assessment Transforming the 49th Fighter Wing’s Combat Capability* (the “49 FW Transformation EA”) was completed in August 2006 (USAF 2006a). It is anticipated that all F-117A aircraft and all but three T-38A aircraft will be gone from Holloman AFB by Fiscal Year (FY) 2008, and the beddown of the F-22A will begin in FY 2009 and continue through FY 2011. Training activities involving the F-22A will be considerably different than those used for the current F-117A and T-38A. The F-117A is a subsonic aircraft used for nighttime air-to-surface missions. The F-22A is a multimission supersonic aircraft capable of air-to-air and air-to-surface missions. The F-22A will conduct a greater portion of training during the day at higher altitudes and at higher speeds.

The 49 FW’s use of the Red Rio and Oscura Ranges for F-22A training is expected to decrease for two reasons: the increased air-to-air capabilities would reduce the time spent on air-to-surface training, and

much of the air-to-surface training would use simulated ordnance delivery so a surface gunnery range is not required as often as with the F-117A. However, use of other WSMR airspace, such as Mesa, Lava, and Yonder, would increase to accommodate the air-to-air training requirements of the F-22A. The proposed 49 FW transformation is expected to change the ceiling of some restricted airspace units at WSMR from unlimited to 60,000 feet above MSL and allow supersonic training at 10,000 feet above MSL. Supersonic training is expected to increase the frequency of sonic booms towards the center of WSMR, which would include the Fairview and Alternative 1 Sites, and increase noise levels and overpressures. Chaff and flare would be used during training at WSMR but would not be expected to result in adverse effects, assuming deployment at proper altitudes and establishment of a buffer to manage fire risks (USAF 2006a). The 49 FW's anticipated operations at WSMR, as presented in the 49 FW Transformation EA, are considered in the cumulative effects analysis. Other components assessed in the 49 FW Transformation EA (i.e., construction, personnel changes, changes in other airspace used by the 49 FW) would not affect WSMR therefore are not considered further in the cumulative effects analysis.

Operations of the German Air Force (GAF) at Holloman AFB. The USAF prepared an EA in 1994 to analyze the environmental effects associated with the beddown and operation of the GAF Tornado aircraft at Holloman AFB. In 1998, the USAF prepared the *Environmental Impact Statement for the Proposed Expansion of German Air Force Operations at Holloman AFB, New Mexico* (the “GAF Expansion EIS”) to analyze the potential effects of the beddown of additional Tornado aircraft (USAF and DA 1998). The GAF continues to train with the Tornado at Holloman AFB and uses some of the same airspace as the 58 SOW on WSMR. It is anticipated that construction of a target set would reduce scheduling conflicts to train at the Red Rio and Oscura Ranges; conversely, the proposed target set could result in some restrictions in operations over the target set when operational due to the vertical hazard from ricochet. Operations of the GAF are considered in the cumulative effects analysis.

Beddown of the CV-22 at Kirkland AFB. The USAF AETC prepared the *Environmental Assessment of Proposed Actions by the 58th Special Operations Wing at Kirtland Air Force Base* (the “58 SOW EA”) in August 2000 (AETC 2000), and is currently preparing the *Supplemental Environmental Assessment of Proposed Actions by the 58th Special Operations Wing at Kirtland Air Force Base, New Mexico* (the “58 SOW Supplemental EA” is in draft stage). The 58 SOW EA and Supplemental EA analyze the drawdown of the H-53 Pave Low helicopter and subsequent replacement with the CV-22 “Osprey” tilt-rotor aircraft. Currently, Kirtland AFB is operating the CV-22 and will continue to receive additional aircraft over the next few years. The USAF’s CV-22 aircraft does not have a weapon, so no gunnery training requirements have evolved. Therefore, it is not reasonably foreseeable at this time to analyze the cumulative effect of the 58 SOW training with the CV-22 at WSMR. If the decision is made to add weapons to the CV-22, potential gunnery training locations and operations would be the subject of additional NEPA analysis. Operations of the CV-22 are not considered further in this cumulative effects analysis.

Beddown of the 27 SOW and Associated Assets at Cannon AFB. As a result of the 2005 Base Closure and Realignment Commission’s recommendations, the AFSOC mission was assigned to Cannon AFB, New Mexico. Consequently, the 27 FW was inactivated and the 27 SOW activated as the host unit of Cannon AFB on October 1, 2007. The USAF prepared the *AFSOC Assets Beddown at Cannon Air Force Base, New Mexico Environmental Impact Statement* (the “AFSOC Assets EIS”) in July 2007 (USAF 2007). Melrose Range, formerly managed by the 27 FW, will become an AFSOC asset managed by the 27 SOW. The AFSOC Assets EIS analyzed the construction of air-to-surface target areas with a variety of target arrays, access roads, and range and fire safety improvements at Melrose Range to accomplish AFSOC’s gunnery training requirements. Melrose Range and its restricted airspace units designated as R5104A, R5104B, and R5105 will be used primarily for the training of AFSOC aircraft though other current users would continue to train there as well. Other activities proposed at Cannon AFB to support

the 27 SOW assets, such as construction or changes in airspace around Cannon AFB, would have no potential for cumulative effects and are not considered further in the cumulative effects analysis.

As described in **Section 2.3**, the Melrose Range is not considered a viable alternative for the construction of the target array proposed in this EA. Since the 58 SOW only uses Melrose Range on occasion, no cumulative environmental effects would be expected from the transfer of range management. However, the ongoing modifications and increased nighttime operations of Melrose Range as a result of the AFSOC beddown could make it a viable training range for the 58 SOW in the future if it meets the training requirements associated with the 58 SOW and fulfills a mission need; this is not reasonably foreseeable at this time. The beddown of the 27 SOW and AFSOC assets are not considered further in the cumulative effects analysis.

Cumulative Effects Analysis

Military actions at WSMR have historically overlapped spatially and temporally; testing and training missions continually come and go. Coordination between the U.S. Army and USAF in scheduling range and airspace use has minimized the potential for adverse cumulative effects on both land use and airspace management. Construction, testing, and training activities were cumulatively analyzed in the Range-wide EIS, which included general mitigation measures for geological resources and soils, hydrology and water resources, air quality, biological resources, cultural resources, land use, utilities and infrastructure, noise, radiation sources, hazardous materials and wastes, and health and safety (DA 1998). The general mitigation measures, and the additional mitigation as needed on a project-by-project basis, minimize the potential for adverse cumulative effects. Potential cumulative effects in this EA are assessed qualitatively.

Land Use, Safety, Airspace Management, and Noise. Implementation of the Proposed Action at either proposed site associated with the proposed target set would result in the loss of land around the target set encompassing the surface danger zone. The Proposed Action would also result in restrictions in access for airspace up to 6,356 feet AGL for the entire area over the target set while training activities are occurring. The GAF currently uses the Fairview area on occasion for low-level Tornado training activities, and the 49 FW could use the airspace above the Fairview Site in R5107B for F-22A training. However, given the availability of other areas similar to the Fairview area and available airspace in R5107B, adverse cumulative effects would not be expected. Cumulatively, Red Rio and Oscura Ranges have the potential to have fewer operations as a result of the Proposed Action and the 49 FW transformation. The Proposed Action would continue to contribute to the noise environment at WSMR. Compared with the ongoing testing and training activities, the 58 SOW is only a small component of the overall noise environment. All testing and training activities would be scheduled through the WSMR Scheduling Committee to ensure test priorities are considered and aircraft operations in the airspace are properly managed. No significant cumulative effects would be expected on land use, safety, airspace management, or noise.

Cultural Resources. The proposed Fairview Site has been surveyed for cultural resources. The results of the survey report are coordinated with the New Mexico SHPO. Upon concurrence, appropriate further mitigation measures, if necessary, would be implemented. The Proposed Action would not be expected to result in significant cumulative effects in conjunction with other proposed projects at WSMR.

Air Quality, Geological Resources, Water Resources, Biological Resources, Socioeconomic Resources and Environmental Justice, Infrastructure, and Hazardous Materials and Wastes. Implementation of the Proposed Action at either the Fairview Site or Alternative 1 Site would have no to negligible effects on these resources. The Proposed Action would not be expected to result in significant cumulative effects in conjunction with other proposed projects at WSMR.

4. Findings and Conclusions

This EA has been prepared to address the potential environmental and socioeconomic consequences associated with the establishment of an air-to-surface helicopter gunnery training target set at WSMR. The Proposed Action (Fairview Site), the Alternative 1 Site, and the No Action Alternative were analyzed in detail in this EA. The following discussion summarizes the findings and conclusions.

Findings

Proposed Action (Fairview Site). Implementation of the Proposed Action at the Fairview Site would not result in significant effects. The following summarizes the findings from **Section 3** by resource area:

- *Land Use.* Minor effects would be expected. While operational, the gunnery assets would limit the type of future military activity that could potentially occur at the site. The Proposed Action would be compatible with the current land use designation for the northern portion of WSMR. Future use of the Fairview Site area would be limited while the target set is active. No effects on public events (i.e., Bataan Memorial Death March and Trinity National Historic Site) would occur. No effects on current hunting activities would be expected. The target set would be identified as off-limits for hunters. The loss of the hunting area encompassing the site would be negligible compared with the acreage that would still be available.
- *Safety.* Negligible effects would be expected. Surface danger zones associated with the proposed target arrays would necessitate limits on access to land areas and dirt roads within designated areas adjacent to the site during periods when the range assets were in use. This control would be considered a normal function of Range Control for operations on a secured military installation such as WSMR.
- *Airspace Management.* Minor and localized effects would be expected. The Proposed Action would involve aircraft operations that would continue to use the same restricted airspace (i.e., R5107) as under current conditions. Use of the airspace over the Fairview Site would be significantly reduced when the target sets are in operation. The vertical component of the ricochet hazard would require that minimum overflight altitudes at 6,365 feet AGL or higher, which would reduce the availability of airspace in the area of target sets for non-participating low and medium altitude aircraft operations. The demand for use of the Red Rio and Oscura Ranges would be reduced.
- *Noise.* Negligible short-term adverse effects would be expected from both construction and from aircraft operations during use of the target sets. Overall aircraft operations in the affected airspace would continue at current levels. The noise generated by operations of the HH-60 Pave Hawk and UH-1N Huey aircraft at the target site proposed under the Proposed Action would not be expected to be at any levels of concern. No towns, population centers, or sensitive noise receptors are within the area potentially affected by noise associated with the Proposed Action. Populated areas adjacent to the range assets would likely not notice any change to the noise environment associated with WSMR.
- *Air Quality.* Negligible effects would be expected. Minor short-term ground disturbance would occur during target placement and establishment of the HLZ, but these would be temporary and localized. Aircraft operations would be similar to existing operations at the Red Rio and Oscura Ranges and the slightly longer travel distance to the Fairview Site would not be considered an adverse effect that would contribute to air emissions. Use of the HLZ would be expected to have a negligible to minor adverse contribution to fugitive dust.

- *Geological Resources.* Negligible short-term effects would be expected. The Proposed Action would require only minor ground disturbance during placement of targets and grading for the HLZ. Negligible to minor adverse effects could occur as a result of helicopter downdraft.
- *Water Resources.* No effects would be expected. There are no perennial surface water bodies in the vicinity. Furthermore, training activities would have little potential to affect surface water or groundwater quality.
- *Biological Resources.* Minor adverse effects could occur. There could be minor disturbance of vegetation during target placement and grading for the HLZ, but there is an abundance of similar undisturbed habitat surrounding the site. Pilots would fly over the site prior to initiating training to check for the presence of wildlife. Wildlife at military installations have been shown to be adaptable to noise, so ongoing training activities would not be expected to result in significant effects on wildlife. Implementation of the Proposed Action would have no significant impacts on threatened or endangered species. The western burrowing owl is the only sensitive species with any real potential for inhabiting the location of the Proposed Action. Surveys for this species would be performed prior to any ground disturbances. If owls are present during the breeding or brood-rearing season, the owls would be relocated or construction would be delayed until October to allow the owls to complete their reproductive cycle. Other sensitive or protected species could occur in the project area as transients or temporary migrants.
- *Cultural Resources.* A cultural resources survey has been completed and minor adjustments in the candidate locations for target assets have been accomplished to mitigate potential impacts. If any cultural resources are encountered during subsequent activities to implement the Proposed Action, then they would be avoided.
- *Socioeconomic Resources.* No effects would be expected. Implementation of the Proposed Action has little to no potential to affect off-installation populations and the area around the Fairview Site is undeveloped. Therefore, no disproportionate effects on minorities, low-income populations, or children would occur in accordance with EOs 12898 and 13045.
- *Infrastructure.* No effects would be expected on utilities. Temporary and intermittent effects could occur on the dirt roads that are within the surface danger zone associated with the target sets and would be off-limits to through traffic during training activities. The roads in the vicinity of the Fairview Site are not heavily used.
- *Hazardous Materials and Wastes.* Negligible to no short-term effects would be expected. Small quantities of fuels and other potentially hazardous materials would be removed from the target hulks following final placement. Minor long-term adverse effects could occur as a result of using lead ammunition at the Fairview Site. However, all of WSMR is designated as an existing range and the use of lead ammunition is allowable. Cleanup of the site from training residue would be accomplished with BMPs.

Alternative 1 Site. Establishment of the target sets at the Alternative 1 Site would not result in significant effects. The environmental consequences associated with the Alternative 1 Site would be essentially the same as those described for the Fairview Site.

No Action Alternative. Implementation of the No Action Alternative would result in no actions being taken at the Fairview Site or the Alternative 1 Site and the continuation of existing conditions. No effects would be expected. The 58 SOW would continue to use the Red Rio Range and Oscura Range for training activities and no change would be expected to existing conditions at these ranges.

Conclusion

The analyses in this EA demonstrate that implementation of the target sets at either the Fairview Site or the Alternative 1 Site would not result in significant environmental effects. Issuance of a FNSI would be appropriate, and an EIS is not required to implement the Proposed Action.

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6. References

AETC 2000 Air Education and Training Command (AETC). 2000. *Final Environmental Assessment of Proposed Actions by the 58th Special Operations Wing at Kirtland Air Force Base*. Prepared for AETC and Kirtland AFB by Ogden Environmental and Energy Services. August 2000.

BLM 2003 Bureau of Land Management (BLM). 2003. *Proposed Resource Management Plan Amendment and Final Environmental Impact Statement for Federal Fluid Minerals Leasing and Development in Otero Counties, Volume 1*. Prepared by U.S. Department of the Interior, BLM, Las Cruces Field Office. December 2003.

CEQ 1997 Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects Under the National Environmental Policy Act*. January 1997.

Christiansen 2006 Christiansen, Tim. 2006. Email communication from Tim Christiansen (WSMR Senior Terrestrial Ecologist/Fire Ecologist, Integrated Training Area Management Program) to Ian Reese (58 SOW Airspace Manager) regarding potential range fires associated with use of the Fairview Mountain Site, WSMR, New Mexico. October 19, 2006.

DA 1998 Department of the Army (DA). 1998. *White Sands Missile Range, Range-wide Environmental Impact Statement*. Report No. WSMREIS-1. January 1998.

DOD and USFWS 2007 Department of Defense (DOD) and U.S. Fish and Wildlife Service (USFWS). 2007. Fact Sheet: "Northern Applomado Falcon (*Falco femoralis septentrionalis*).” July 2007. Available online: <<http://www.fws.gov/endangered/DOD/applomado%20falcon%20fact%20sheet.pdf>>. Accessed August 16, 2007.

Griffin 2007 Griffin, Trish. 2007. Review comment from Ms. Trish Griffin (Wildlife Biologist, Environmental Stewardship Branch, White Sands Missile Range) on the *Draft Environmental Assessment for the Establishment of an Air-to-Surface Helicopter Gunnery Training Target Set at White Sands Missile Range, New Mexico* (August 2007). September 19, 2007.

Manci et al. 1988 Manci, K.M., D.N. Gladwin, R. Villella, and M.G. Cavendish. 1988. *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis*. NERC-88/29 and AFESC TR 68-14. Prepared by the U.S. Fish and Wildlife Service, National Ecology Research Center and U.S. Air Force, Engineering and Services Center. June 1988.

Muldavin et al. 2000 Muldavin, E., Y. Chauvin, and G. Harper. 2000. *The Vegetation of White Sands Missile Range, New Mexico. Volume 1: Handbook of Vegetation Communities*. New Mexico Natural Heritage Program.

NATO 2000 North Atlantic Treaty Organization (NATO). 2000. *The Effects of Noise From Weapons and Sonic Booms, and the Impact on Humans, Wildlife, Domestic Animals and Structures*. Report No. 241. June 2000.

Nethers 2007 Nethers, Debbie. 2007. Review comment from Ms. Debbie Nethers (ITAM Coordinator, Test Center Operations Office, White Sands Missile Range) on the *Draft Environmental Assessment for the Establishment of an Air-to-Surface Helicopter Gunnery Training Target Set at White Sands Missile Range, New Mexico* (August 2007). September 10, 2007.

NMCPR 2007a New Mexico Commission of Public Records (NMCPR). 2007. "Ambient Air Quality Standards." Title 20, Chapter 2, Section 3 New Mexico Administrative Code. Filed October 1995, Code last updated October 2002. The Official Site of the New Mexico Administrative Code. Available online: <<http://www.nmcpr.state.nm.us/NMAC/parts/title20/20.002.0003.htm>>. Site last updated August 1, 2007. Accessed August 7, 2007.

NMCPR 2007b NMCPR. 2007. "Endangered Plant Species List and Collection Permits." Title 19, Chapter 21, Part 2 New Mexico Administrative Code. Filed August 1995, Code last updated November 2006. The Official Site of the New Mexico Administrative Code. Available online: <<http://www.nmcpr.state.nm.us/NMAC/parts/title19/19.021.0002.htm>>. Site last updated August 1, 2007. Accessed August 14, 2007.

NMDG&F 2006 New Mexico Department of Game and Fish (NMDG&F). 2006. *Threatened and Endangered Species of New Mexico: 2006 Biennial Review and Recommendations*. Prepared under the authority of Wildlife Conservation Act (17-2-37 through 17-2-46 New Mexico Statutes Annotated 1978). August 25, 2006. Available online: <http://www.wildlife.state.nm.us/conservation/threatened_endangered_species/index.htm>. Accessed August 14, 2007.

NMDG&F 2007 NMDG&F. 2007. Biota Information System of New Mexico (BISON-M) Database Query: Taxonomic Groups in Sierra County. Available online: <<http://www.bison-m.org.aspx>>. Accessed August 14, 2007.

Pigg 2007 Pigg, James. 2007. Email communication from James Pigg (WSMR Environmental Attorney) to Lorraine Salas (WSMR Realty Specialist) regarding the Fairview Site, WSMR, New Mexico. March 29, 2007.

Prather 2007 Prather, Joe. 2007. Personal communication between Mr. Joe Prather (Program Manager for UXB International, Inc.) and Mr. Rob Frei (Clover Leaf Environmental Solutions, Inc.). March 15, 2007.

Reese 2007a Reese, Ian. 2007. Email and telephone communications between Ian Reese (58 SOW Airspace Management) and Jeffrey Weiler (e²M) addressing various EA-related operational data. October 9, 2007.

Reese 2007b Reese, Ian. 2007. Email communication between Ian Reese (58 SOW Airspace Management) and Jeffrey Weiler (e²M) regarding range time requests for the 58 SOW. August 6, 2007.

Reese 2007c Reese, Ian. 2007. Email and telephone communications between Ian Reese (58 SOW Airspace Management) and Jeffrey Weiler (e²M) addressing various aspects of range operations. August 6–9, 2007.

Reese 2007d Reese, Ian. 2007. Email communication between Ian Reese (58 SOW Airspace Management) and Jeffrey Weiler (e²M) addressing 50 cal footprints for proposed target sets at Fairview site. August 1, 2007.

Rodden 2007 Rodden, Cristina. 2007. Review comment from Ms. Cristina Rodden (U.S. Army ITAM, IMCOM) on the *Draft Environmental Assessment for the Establishment of an Air-to-Surface Helicopter Gunnery Training Target Set at White Sands Missile Range, New Mexico* (August 2007). September 2007.

USAF 2002 U.S. Air Force (USAF). 2002. *Flyover Noise Calculator*. Version 1.0.2. Beta. Developed by USAF AFRL/HECB. May 2002.

USAF 2006a USAF. 2006. *Final Environmental Assessment Transforming the 49th Fighter Wing's Combat Capability*, which incorporated by reference the Draft of the EA. Draft EA dated June 2006. Final EA dated August 2006.

USAF 2006b USAF. 2006. *Engineering Technical Letter (ETL) 06-11: Small Arms Range Design and Construction*. Prepared by Headquarters Air Force Civil Engineer Support Agency, Engineering Support Directorate. November 28, 2006.

USAF 2007 USAF. 2007. *AFSOC Assets Beddown at Cannon Air Force Base, New Mexico Environmental Impact Statement*. July 2007.

USAF and DA 1998 USAF and U.S. Army (DA). 1998. *Volume 1: Final Environmental Impact Statement, Proposed Expansion of German Air Force Operations at Holloman AFB, New Mexico*. Prepared for USAF Headquarters Air Combat Command by the U.S. Army Corps of Engineers, Fort Worth District. April 1998.

USDA, NRCS 2007 U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2007. The PLANTS Database. Maintained by the National Plant Data Center: Baton Rouge, LA. Available online: <<http://plants.usda.gov>>. Accessed August 14, 2007.

USEPA 1974 U.S. Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Publication No. 550/9-74-004. Washington, D.C. March 1974.

USEPA 2007 USEPA. 2007. "National Ambient Air Quality Standards." 40 Code of Federal Regulations Part 50. USEPA Air and Radiation Web Site. Available online: <<http://epa.gov/air/criteria.html>>. Site last updated March 2, 2007. Accessed August 7, 2007.

USFWS 2006 U.S. Fish and Wildlife Service (USFWS). 2006. *Final Environmental Assessment for Reestablishment of the Northern Aplomado Falcon in New Mexico and Arizona*. June 2006. Available online: <http://www.fws.gov/southwest/es/newmexico/documents/Final_Environmental_Assessment_AF_NM_Ariz.pdf>. Accessed August 6, 2007.

USFWS 2007 USFWS. 2007. "Listed and Sensitive Species in Sierra County [New Mexico]." Current as of April 9, 2007. Available online: <<http://www.fws.gov/southwest/es/NewMexico/SBC.cfm>>. Accessed August 14, 2007.

Winnett 2007 Winnett, David. 2007. Review comment from Mr. David Winnett (Wildlife Biologist, Zia Engineering and Environmental) on the *Draft Environmental Assessment for the Establishment of an Air-to-Surface Helicopter Gunnery Training Target Set at White Sands Missile Range, New Mexico* (August 2007). September 20, 2007.

WSMR 2002a White Sands Missile Range (WSMR). 2002. *Integrated Wildland Fire Management Plan, White Sands Missile Range, New Mexico*. Prepared by The Natural Conservancy and Unitec. July 2002.

WSMR 2002b WSMR. 2002. *Integrated Natural Resources Management Plan*. Prepared by New Mexico Natural Heritage Program and Environment and Safety Directorate, Environmental Stewardship Division, White Sands Missile Range. December 2002.

WSMR 2005 WSMR. 2005. Tri-Service Aviation Training Operations on White Sands Missile Range. Letter of Agreement between WSMR, the U.S. Air Force (49th Fighter Wing and 46th Test Group), and U.S. Navy. WSMR, New Mexico. April 22, 2005.

WSMR, NMNG, and USAEC 2006 WSMR, New Mexico National Guard (NMNG), and U.S. Army Environmental Center (USAEC). 2006. *Final Environmental Assessment for Proposed Training Ranges, White Sands Missile Range, New Mexico*. July 2006.

Young et al. 2005 Young, K.E., B.C. Thompson, R. Valdez, W.R. Gould, and A. Lafón Terrazas. 2005. *Assessment of Predictive Values from the Aplomado Falcon Habitat Suitability Model: Validation Information for Conservation Planning in the Northern Chihuahuan Desert*. Conducted by the New Mexico Cooperative Fish and Wildlife Research Unit in collaboration with the Fishery and Wildlife Sciences Department; University Statistics Center, New Mexico State University; and Facultad de Zootecnia, Universidad Autonoma de Chihuahua. August 2005.

APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws as well as Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Airspace

Airspace management in the USAF is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace (SUA). It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace and establishes practices to decrease disturbances from flight operations that might cause adverse public reaction and provides flying unit commanders with general guidance for dealing with local problems.

Noise

The Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near U.S. Air Force (USAF) installations.

Land Use

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQSs) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment to pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCR). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated

as unclassifiable. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction as well as long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

The General Conformity Rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS, contribute to an increase in the frequency or severity of violations of NAAQS, or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 CFR 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

Safety

AFI 91-202, *USAF Mishap Prevention Program*, implements Air Force Policy Directive (AFPD) 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information. This instruction applies to all USAF personnel.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFPD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

Geological Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland are soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, deep or thick effective rooting zones, and are not subject to periodic flooding. Under the Farmland Protection Policy Act, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the Farmland Protection Policy Act include Federal permitting and licensing, projects on land already

in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water-quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water-quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone, through the development of land and water use programs in cooperation with Federal and local governments. States may apply for grants to help develop and implement management programs to achieve wise use of the land and water resources of the coastal zone. Development projects affecting land or water use or natural resources of a coastal zone, must ensure the project is, to the maximum extent practicable, consistent with the state's coastal zone management program.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office.

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport or carry from one state, territory, or district to another, or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA. The USFWS issued the *Final Rule: Migratory Bird Permits; Take of Migratory Birds by the Armed Forces* (*Federal Register* Vol. 72, No. 39, pp. 8,931–8,950, February 28, 2007), which became effective March 30, 2007. This Final Rule exempted the Armed Forces from incidental taking of migratory birds during military readiness activities. The Armed Forces must determine if a proposed or ongoing military readiness activity is likely to result in a significant adverse effect on a population of migratory bird species and coordinate as appropriate with the USFWS to develop reasonable conservation, minimization, or mitigation measures. Routine installation operations, industrial activities, and construction and demolition activities are not considered military readiness activities under this Final Rule.

The Bald and Golden Eagle Protection Act of 1940 prohibits any form of possession or taking of both bald eagles and golden eagles. This act makes it unlawful to knowingly or with wanton disregard take, possess, sell, purchase, barter, offer to sell or purchase, transport, import, or export either species, whether alive or dead, to include any part, nest, or egg of either species. Authorizations for take, possession, or transport of bald or golden eagles may be provided by the Secretary of the Interior for scientific or exhibition purposes, for the religious purposes of Native American tribes, or if it becomes necessary to permit the taking for the protection of wildlife or of agricultural or other interests in a particular locality.

EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (AHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). AHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of

their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 establishes rights of American Indian tribes to claim ownership of certain “cultural items,” defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners’ access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13287, *Preserve America* (March 3, 2003), orders Federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list “programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-

income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations.” A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal “Superfund” to respond to emergencies immediately. Although the “Superfund” provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]) sets a goal for all Federal agencies that promotes environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of, increase diversion of solid waste as appropriate, and maintain cost effective waste prevention and recycling programs in their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to “incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA.”

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for “cradle-to-grave” management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with “hazardous substances” or “extremely hazardous substances” to prepare comprehensive emergency plans and to report accidental releases. EO 12856 requires Federal agencies to comply with the provisions of EPCRA. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as “owners.” However, if the agency exercises due

diligence by conducting a Phase I Environmental Site Assessment, it can claim the “innocent purchaser” defense under CERCLA. According to Title 42 United States Code (U.S.C.) 9601(35), the current owner/operator must show it undertook “all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice” before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for “Asbestos Hazard Emergency Response,” which applies only to schools. TSCA Title III, “Indoor Radon Abatement,” states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, “Lead Exposure Reduction,” directs Federal agencies to “conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards.” Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

APPENDIX B
AGENCY AND PUBLIC INVOLVEMENT

Appendix B **Agency and Public Involvement**

The following agencies and organizations were sent a copy of the Draft EA for review and comment:

Tribal Governments

Mescalero Apache Tribe
Office of the President
P. O. Box 227
Mescalero, NM 88340

Mr. Rich Wareing

49 CES/CEVA
550 Tabosa Avenue, Building 55
Holloman AFB, NM 88330-8458

Federal Agencies

Mr. Richard Greene, Regional Administrator
U.S. Environmental Protection Agency
Region VI (6PD-N)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Mr. Wally Murphy
New Mexico Ecological Services Field Office
U.S. Fish and Wildlife Service
2105 Osuna Road NE
Albuquerque, NM 87113

Mr. Bill Howe
Migratory Bird Permit Office
U.S. Fish and Wildlife Service
P.O. Box 709
Albuquerque, NM 87103

Mr. John Barrera
ATZC-DOE-C
B624, Pleasonton Road
Fort Bliss, TX 79916-6812

State Agencies

Ms. Katherine (Kak) Slick, SHPO
Historic Preservation Division
Department of Cultural Affairs
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe, NM 87501

Ms. Lisa Kirkpatrick
Conservation Services Division
New Mexico Department of Game and Fish
P.O. Box 25112
Santa Fe, NM 87504

Dr. Gedi Cibas
Border and Environmental Reviews
New Mexico Environment Department
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502-6110

Ms. Sarah Cottrell
New Mexico SPOC
Energy and Environmental Policy Advisor
State Capitol Building, Suite 400
Santa Fe, NM 87501

A Notice of Availability for the Draft EA was published on November 4, 2007, in the *Alamogordo Daily News*, the *Las Cruces Sun-Times*, and the *El Defensor-Chieftain* (in Socorro, New Mexico). Publication of the Notice of Availability initiated a 15-day public and agency review and comment period. One comment in response to the Draft EA was received. This comment is included in this appendix on the following page and was considered in preparation of the Final EA.

Copies of the Draft EA were made available in the following libraries for public review:

Alamogordo Public Library
920 Oregon Avenue
Alamogordo, NM 88310-5835

Truth or Consequences Public Library
325 Library Lane
Truth or Consequences, NM 87901

Socorro Public Library
401 Park St., SW
Socorro, NM 87801

WSMR Post Library
Building 465
WSMR, NM 88002

Thomas Branigan Memorial Library
200 E. Picacho Avenue
Las Cruces, NM 88001

Comment on Draft EA:

-----Original Message-----

From: Bill_Howe@fws.gov [mailto:Bill_Howe@fws.gov]
Sent: Monday, November 19, 2007 4:13 PM
To: Watkins Evelyn C Civ 377 MSG/CEVQ
Subject: Re: Environmental Assessment for the Establishment of a Gunnery Target Set at WSMR

Dear Ms. Watkins,

I apologize that none of us were around to review the EA within your requested time frame, but we did take a quick look at the wildlife section. I hope these will still be useful to you.

The document reads that the pilots "should" do the flyovers prior to opening fire. It would be better if the pilots "will be required" to do the flyovers.

.50 caliber machine gun bullets and 7.62 mm "minis" do a pretty good job of tearing things up. Flyovers prior to shooting should scare off most of the ambulatory or flighted critters at the target sites. Creatures like Burrowing Owls, however, if on-site, would go underground instead of flying away, and be vulnerable. Would there be a chance to survey the area beforehand and possibly relocate Burrowing Owl families that might be present? Artificial burrows work well in some areas.

Ricochets greatly increase the affected area. Perhaps the pre-fire overflights could be expanded to try to drive animals out of the area potentially affected by ricochets.

Thanks for the opportunity to comment, and I apologize again for the delay in getting these comments back to you.

Sincerely,

Bill Howe
Nongame Coordinator, Migratory Bird Office USFWS P.O. Box 1306 Albuquerque, NM 87103
505-248-6875
Bill_Howe@fws.gov

Air Force's Response:

-----Original Message-----

From: Watkins Evelyn C Civ 377 MSG/CEVQ [mailto:evelyn.watkins@kirtland.af.mil]
Sent: Tuesday, November 20, 2007 12:29 PM
To: Bill_Howe@fws.gov
Cc: Bullock, Peter Y Mr CIV USA IMCOM; Heather C. Seus; Jeffrey L. Weiler
Subject: RE: Environmental Assessment for the Establishment of a Gunnery Target
Set at WSMR

Mr. Howe,

Thank you for your comments.

I have spoken with Ian Rees, 58th SOW Airspace Manager, regarding the flyovers. He indicated that any time they have parities unfamiliar with the range, they do a flyover for safety and to ensure the new gunners know where the targets are. Because their program is one of training students, he indicated they normally have at least one new person every time they use the range. Therefore, a flyover is normally done prior to engaging any targets.

Valerie Renner, Kirtland's Cultural Resource Program Manager, visited WSMR during the last week of September to survey the target and helicopter landing zone locations for cultural resources. She also has experience with prairie dogs and burrowing owls here at Kirtland. I asked if she saw any burrows while doing her CR survey. She indicated that there were large burrows, probably from badgers, and the burrows appeared abandoned. The only sign of wildlife at the burrows was one rattlesnake. She did not survey the entire range area, but the areas where there is the greatest likelihood of impact (i.e., target areas and the HLZ)

The size of the area surveys is indicated in the following information from Valerie:

Valerie Renner from Kirtland AFB and James Gallison from engineering environmental Management (e2M) conducted a 30 m² survey for each of the target areas that included a 30 m long road access corridor survey for the two-track access road, and a 60 m² survey for the two HLZs. The purpose of the survey was to locate and evaluate archaeological resources. Where archeological sites were located within the proposed impact zone, project archeologists moved selected targets and HLZs and rerouted two tracks in order to avoid potential impact damage.

Evelyn
846-4377

APPENDIX C
RANGE SURFACE DANGER ZONE MODELING

Appendix C

Range Surface Danger Zone Modeling

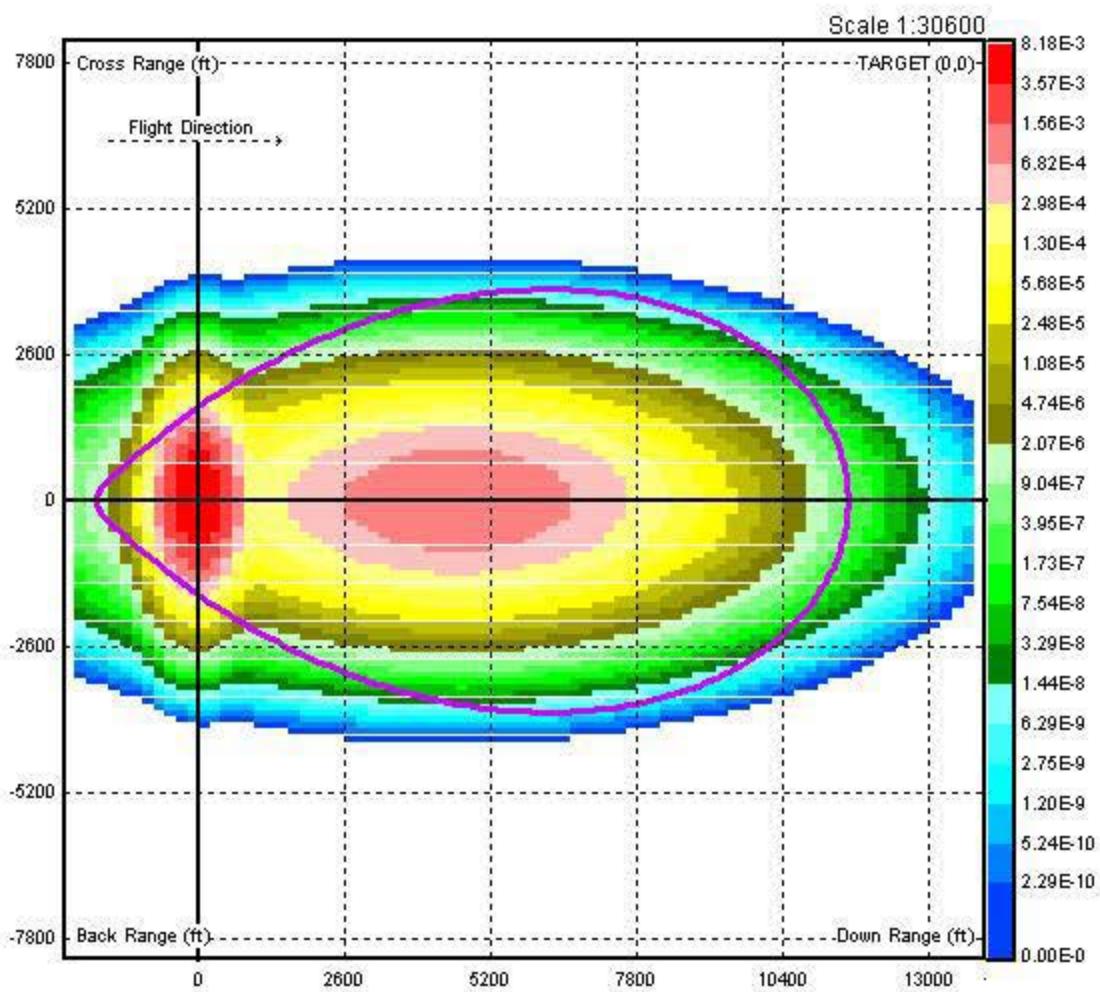
Introduction

This appendix presents the output of modeling accomplished to support the establishment of the surface danger zones associated with the target arrays proposed for the two alternative sites considered in this EA.

The *SafeRange* Program Methodology (Air Force Instruction 13-212, Volume 3, Dated 7 August 2001) provides guidance in the use of USAF-prescribed software designed specifically to assist in the establishment and management of live-fire range assets. The modeling results provide information useful to ensure safe operations of range assets, including the outline of the Training Weapon Safety Footprint Areas (WSFA) associated with various range assets. The output of this modeling, when combined with overlays of Geospatial Information System (GIS) data, provides a prediction of the surface danger zones that should be considered in decisions as to potential operations of range assets specific to actual locations.

The modeling analysis adopted for this EA uses a conservative scenario that assumes a flat topography and the use of ammunition producing the widest possible footprint (.50 cal machine gun rounds). The results of the modeling provide direct-fire and ricochet hazards associated with the proposed target arrays. The graphic on page C-2 illustrates the generic footprint of a .50 cal machine gun round fired from a HH-53 helicopter while in flight. The model output indicates that at least 99.99 percent of all rounds would travel a maximum of 11,498 feet downrange. Side and back range ricochet hazards are also predicted.

The generic surface danger zone footprint can then be combined with GIS data to predict the footprints at the two alternative sites considered for analysis. The topographic map on page C-3 shows the weapons footprints for the two sets of targets at the Fairview Site. For this site, there are two surface danger zones shown because there are two different target sets, each with its own direction of fire. The southern-most target set of four targets would have only one direction of fire and is designed to be engaged by aircraft guns facing north at the time of engagement (i.e., aircraft flying east/west or west/east). The six targets to the north will be engaged by guns firing east and west from both sides of the aircraft simultaneously (i.e., three targets on each side of the aircraft). This information was used to produce the figure shown in **Chapter 3** of the EA as **Figure 3-1**. The topographic map on page C-4 shows the weapons footprints for the proposed target set at the Alternative 1 Site. For this site, the target would only be engaged by guns firing east out of one side of the aircraft (i.e., aircraft flying north/south or south/north). This information was used to produce the figure shown in **Chapter 3** of the EA as **Figure 3-2**.



MISSION PARAMETERS

WWSFA Name: 243 (USAF)
 Aircraft: HH-53
 Weapon: 50 Cal
 Event: Heli Strafe
 Range Type: Low Threat Tactical
 Target/Terrain: Soft/Firm
 Release Angle (deg): 1000 to 2000
 Altitude (ft AGL): 75 to 300
 Airspeed (KTAS): 0 to 100

WSFA PARAMETERS

Down Range (ft): 11498
 Back Range (ft): 1817
 Max Cross Range (ft): 3745

CONTAINMENT LEVEL

99.99 Percent

CONFIDENCE LEVEL

96 Percent

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